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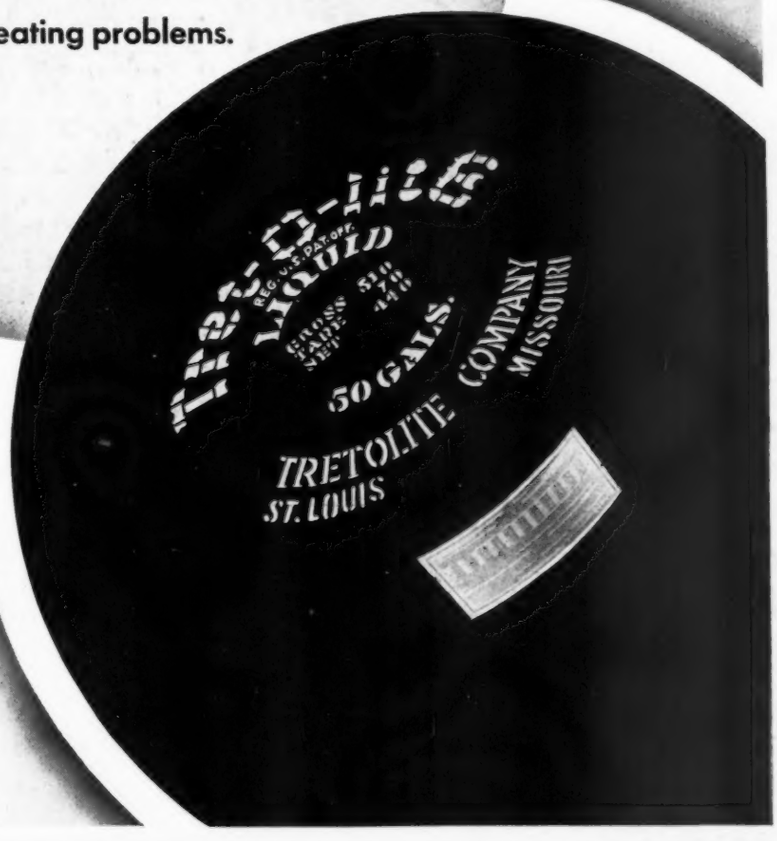

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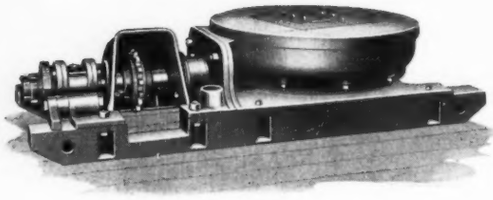

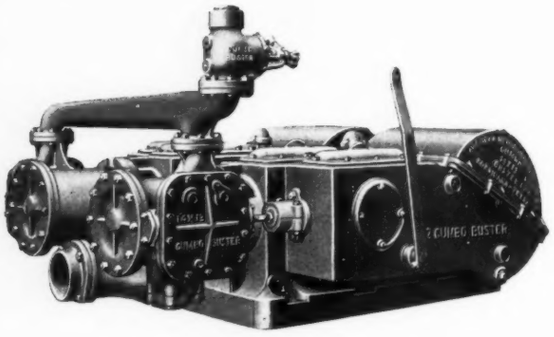

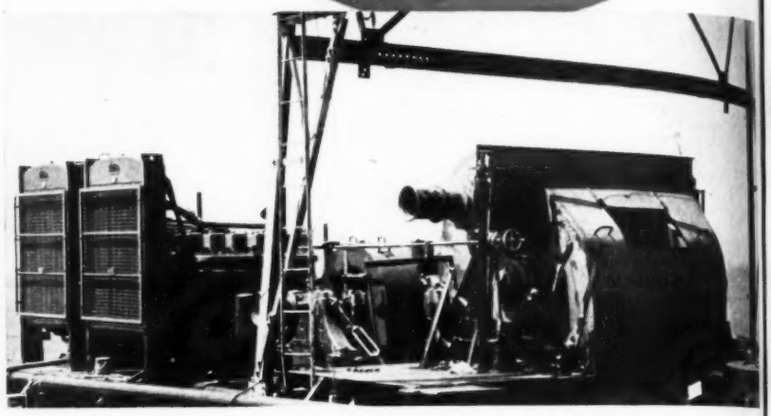

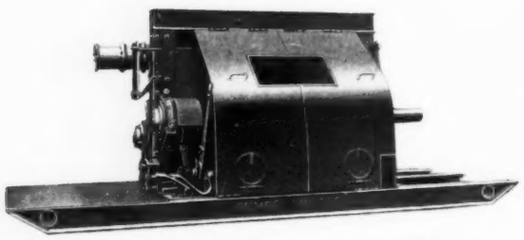

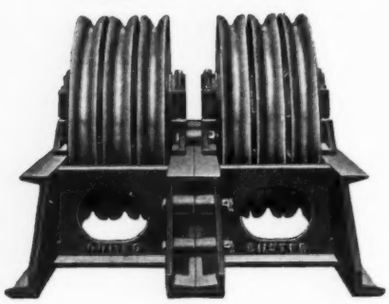

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A MAGAZINE OF METHODS FOR OPERATING MEN

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Meetings

- American Society of Mechanical Engineers—September 22, 23, and 24, Erie, Pennsylvania.
- American Gas Association, 19th Annual Meeting—September 27, 28, 29, 30, and October 1, Cleveland, Ohio.
- Society of Automotive Engineers, Fuels and Lubricants Regional Meeting—September 30 and October 1, Tulsa, Oklahoma.
- California Natural Gasoline Association — October 7, Richfield Building, Los Angeles, California.
- Oil-World Exposition, Inc.—October 11, 12, 13, 14, 15, and 16, Houston, Texas.
- Institution of Mechanical Engineers, General Discussion on Lubrication and Lubricants—October 13, 14, and 15, London, England.
- Independent Petroleum Association of America, Annual Meeting—October 14, 15, and 16, Houston, Texas.
- American Association of Petroleum Geologists, Mid-Year Meeting—October 14, 15, and 16, William Penn Hotel, Pittsburgh, Pennsylvania.
- American Welding Society, 18th Annual Meeting and Welding Exposition—October 18, 19, 20, 21, and 22, Atlantic City, New Jersey.
- Mid-Continent Oil and Gas Association of Texas, Annual Convention—October 29, and 30, Dallas, Texas.
- American Petroleum Institute, 18th Annual Meeting—November 9, 10, 11, and 12, Stevens Hotel, Chicago, Illinois.
- International Petroleum Exposition—May 14, 15, 16, 17, 18, 19, 20, and 21, 1938, Tulsa, Oklahoma.

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Roger Motheral
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Telephone: Locust 1500

TULSA, OKLAHOMA
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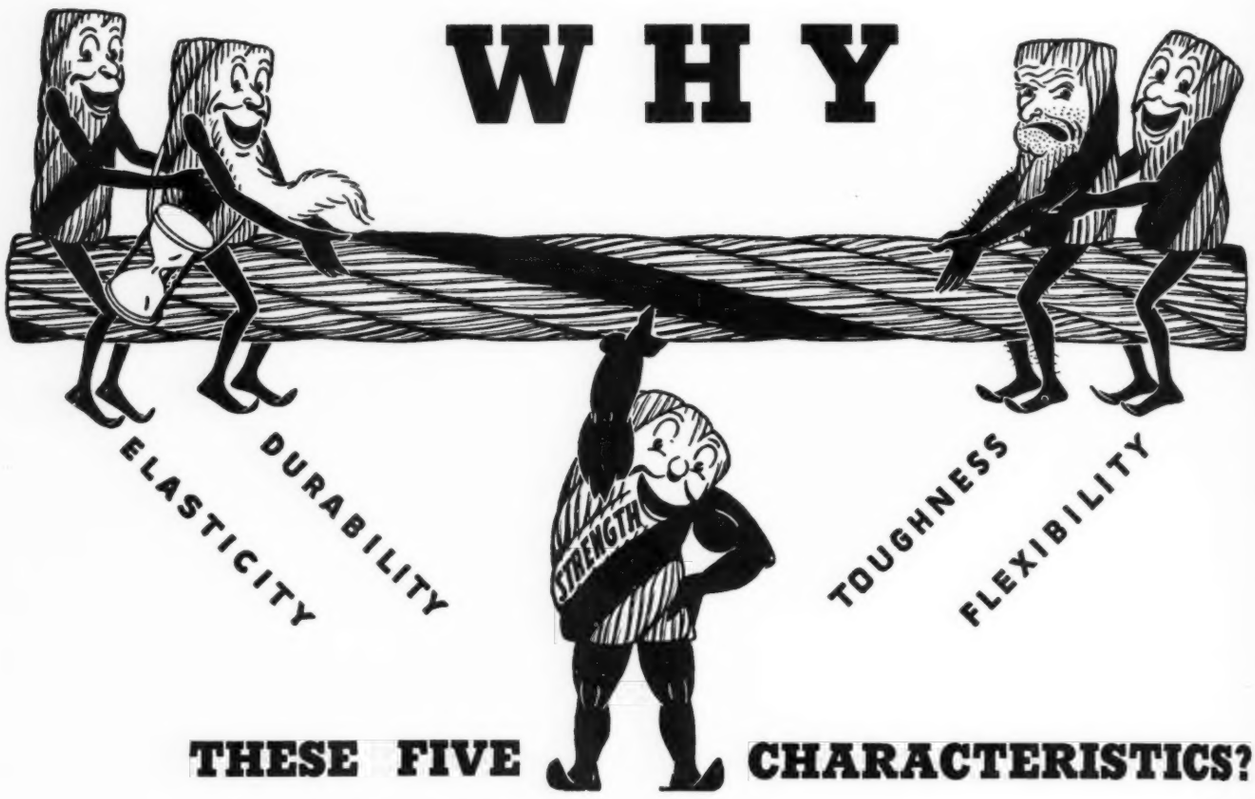

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The Course of Oil

By K. C. SCLATER

East Texas Pressure Decline Bottom-hole pressures in the East Texas field have been declining at an abnormal rate during the last three months. When the abnormal decline was reported for the second consecutive month, it was expected that some action would have been taken by the Railroad Commission to reduce the allowable. No action was taken, however. Apparently the Railroad Commission deemed it advisable to wait for another month, ostensibly to verify the rate of decline. What course, if any, the Commission will follow is at present a matter of conjecture.

There is reason for the Railroad Commission's reluctance to reduce the allowables further. Proration in the field is at a critical point. A further reduction in field allowable means that the well allowable would fall below that of marginal wells, in which case, it is quite likely the action of the Railroad Commission would be challenged. Court action probably would follow, for the legality of such a reduction in well allowable is a question that the courts in all likelihood would be called upon to decide. A decision would rest on the interpretation placed upon the marginal well law.

With the dense drilling program being followed in the East Texas field, it was inevitable that allowables must soon reach their present critical point. Either there must be a reduction in allowables or the economic life of the field be shortened by rapid pressure decline. Water encroachment is increasing. The quantity of water being produced at present is believed to be in excess of 60,000 barrels daily. This is hastening the decline of bottom-hole pressures. Raising this quantity of water to the surface also is hastening the depletion of reservoir energy. Water encroachment can be retarded and reservoir energy wisely conserved by reducing the field allowable. Whether the allowable will be reduced sufficiently to bring this about remains to be seen.

As more wells are completed in the field proration troubles will be aggravated. Unless the field allowable is reduced, lifting costs in the field will increase and the economic life of many wells in the field will be reduced. As was pointed out in this column in January, 1936, the failure to adopt a well-spacing program—a program dictated by sound economy and engineering principles of reservoir control—is at the root of the trouble over proration. Excellent as have been the results obtained by proration in the East Texas field, they could have been improved upon by enforcing a better controlled well-spacing program. It is to the interest of all operators in the East Texas field, that the field allowable be further reduced, regardless of the marginal well law. Reservoir conditions should govern the reduction in allowable—down to the point, at least, where wells become unprofitable at the prevailing crude price.

It is realized that a difficulty arises regarding setting the allowable of marginal wells and flowing wells on an equitable basis. This difficulty should not be a serious one to overcome if operators are made to realize that the economic life of the field is at stake and that a reduction in the field allowable is imperative.

Houston Oil-World Exposition All the very latest in improved equipment for the petroleum industry will be on exhibit next month at the Oil-World Exposition, Houston, Texas. Besides the comprehensive display of materials and machinery, there will be other educational features in the form of meetings and conferences at which modern field and plant practices will be discussed by authorities. Oil men, no matter what their specific sphere of interest in petroleum, should find a visit to the Oil-World Exposition an entertaining means of becoming reliably informed and being brought up-to-date on the very latest advancements in processes, materials, and machinery employed in the production, transportation, and refining of petroleum, including natural gas.

Glimpses of actual operations in the Gulf Coast region may be had by visitors. Houston is the center of petroleum development in the Texas and Louisiana Gulf Coast, one of the most prolific oil-producing regions of the world. As a refining center, this region is one of the largest.

Its transportation systems are vast in their scope of operations. Numerous trunk pipe-lines that reach directly or indirectly into all the major producing districts in Texas, Louisiana, and the Mid-Continent, converge on the Gulf Coast. These serve as feeders for its refineries, tank farms, and deep-sea shipping terminals. Crude petroleum and its refined products are shipped from its deep-water terminals to all important refining centers and markets, domestic and foreign.

Deep drilling problems in the Gulf Coast are among the most formidable to be found anywhere. Abnormally high pressures, large volumes of gas, and heaving shales are not the least of these. Much has been learned and many difficulties overcome in recent years on these phases of deep drilling. In the solution of deep-drilling problems, the Gulf Coast has an enviable record.

Modern geophysical exploration methods have been pioneered on the Gulf Coast, which proved to be a veritable laboratory for petroleum exploration of this type.

The Oil-World Exposition will provide an excellent opportunity to observe what progress has been made in deep-drilling practice, and also the new developments and trends in maritime drilling and prospecting methods. For the convenience of our readers who plan to attend the Exposition, this issue contains a concise directory of the exhibits and a daily program of events.

« « HIGHLIGHTS IN OILDOM » »

East Texas Wells Making 53,385 Bbl. Salt Water Daily

A report of the engineering department of the Texas Railroad Commission reveals that salt water encroachment has been slow in the East Texas field, and the orderly production practice of the area is given as the reason.

The report shows that 43,358 bbl. of salt water are being produced daily, virtually all of which is coming from the Woodbine sand. This volume of water is from 2595 of the 5025 wells tested by commission engineers. Of the 3663 pumping wells in the field 1518 are producing some salt water, while 72 of the 358 wells operating on gas-lift also are making some salt water.

At one time, when the field was running wide open, it was predicted that salt water encroachment would become a serious production problem, but orderly production and withdrawal practices now in effect have taken advantage of the water as a driving force to help produce a greater percentage of the oil in the reservoir.

●

Drilling Operations in Gippsland, Australia

The intensive drilling campaign conducted by the Mines Department in Gippsland, Australia, terminated on June 30, 1937, when the greater portion of the 10,000 pounds sterling contributed half by the state and half by the Commonwealth Government was expended. The Commonwealth authorities have suggested that deeper drilling be planned in the next fiscal year, and that the equipment be modernized. It is understood that drilling rigs owned by the Commonwealth Government for work in Queensland also will be made available.

Work to date has consisted of drilling seven holes to a depth of 1400 ft., from North Fernbank to Seaspray. Cores have been taken and sent to Canberra for palaeontological examination. Plans and sections are being prepared for making logical locations that will be drilled to a depth of 4000 feet.

●

Bill Extending Prospecting Permits Signed

President Roosevelt has signed the bill providing for a two-year extension of federal prospecting permits. The measure previously had been passed by the House of Representatives and the Senate. Under its provisions prospecting permits will be extended for the designated period provided they meet certain requirements. The latter clause was put into the bill to prevent the extension of permits obtained but under which no effort had been made at discovery or development.

●

Oil Prospecting in Great Britain

The secretary of mines of Great Britain stated in the House of Commons recently that during the last two years (apart from the number of shallow drillings for geological purposes), five tests for oil production had been started. Two had been completed and three were still in progress. In the two completed holes traces of oil were found but no accumulations were discovered.

The secretary issued a statement showing the number of licenses granted and the area covered, as follows: D'Arcy Exploration Company, 52 licenses covering 9233 sq. miles; Anglo-American Oil Company, five licenses covering 478 sq. miles; Midlothian Petroleum Company, one license covering 12 sq. miles; Steel Brothers and Company, two licenses covering 350 sq. miles; Gulf Exploration Company (Great Britain), nine licenses covering 1277 sq. miles.

●

Concession for Petroleum Exploration in Guatemala

The first publication of the formal request of the "Campania Guatemalteca de Petroleo Shell" for an oil concession was made in the Diario de Centro America, the Guatemalan official gazette, on July 7th. The desired concession is divided into seven sections of territory and embraces a total of approximately 7,600,000 acres. Practically the entire region of Peten, with the exception of a zone 15 miles wide following the border, is involved, together with parts of the Departments of Izabal and Alta Verapaz.

Two other requests for exploratory concessions, both from local capitalists, also have been published recently. One under date of May 27th is for approximately 100,000 acres in the region immediately south of Lake Izabal, and the second, published July 6th, is for approximately 170,000 acres lying to the north of Lake Izabal.

●

Long Beach Cannot Lease Harbor Lands

The city attorney of Long Beach, California, has ruled that the city cannot lease its lands in the Harbor District for oil drilling and development. It can, however, drill wells with its own employees or contract their drilling. The city attorney's decision was based on an almost identical case, that of the City of Los Angeles against Lewis Stone, in which the city was prevented from leasing its tidelands at Playa del Rey.

The wells are expected to be drilled in the Harbor District of Long Beach, however, as the Harbor Board, foreseeing some such difficulty, provided, in its current budget, sums for contracting the drilling and will grant the drilling to some contractor when and if the area is opened.

●

New Gas Rates Issued; Enforcement Enjoined

On August 24th the Texas Railroad Commission issued an order fixing rates for the Lone Star Gas Company. Enforcement of the order was enjoined a few hours after its issuance, the injunction being obtained by Attorney General McCraw in order that he might test the validity of the order in a court of his own selection.

The new rates are as follows: For the first 1000 cu. ft., 75 cents; for the next 19,000 cu. ft., 61 cents per thousand; for the next 10,000 ft., 57 cents per thousand; for the next 20,000 ft., 52 cents per thousand; for all gas in excess of 50,000 cu. ft., 42 cents per thousand. For failure to pay the bill within ten days, a charge of 11 1/9 percent may be added. Minimum monthly bill, 50 cents.

The old rates were as follows: For the first 700 cu. ft., 16.75 cents per hundred cu. ft.; for the next 19,300 cu. ft., 7.5 cents per hundred cu. ft.; for the next 10,000 cu. ft., 7.23 cents; for the next 20,000 cu. ft., 6.67 cents; for the next 50,000 cu. ft., 5.56 cents. For prompt payment of the

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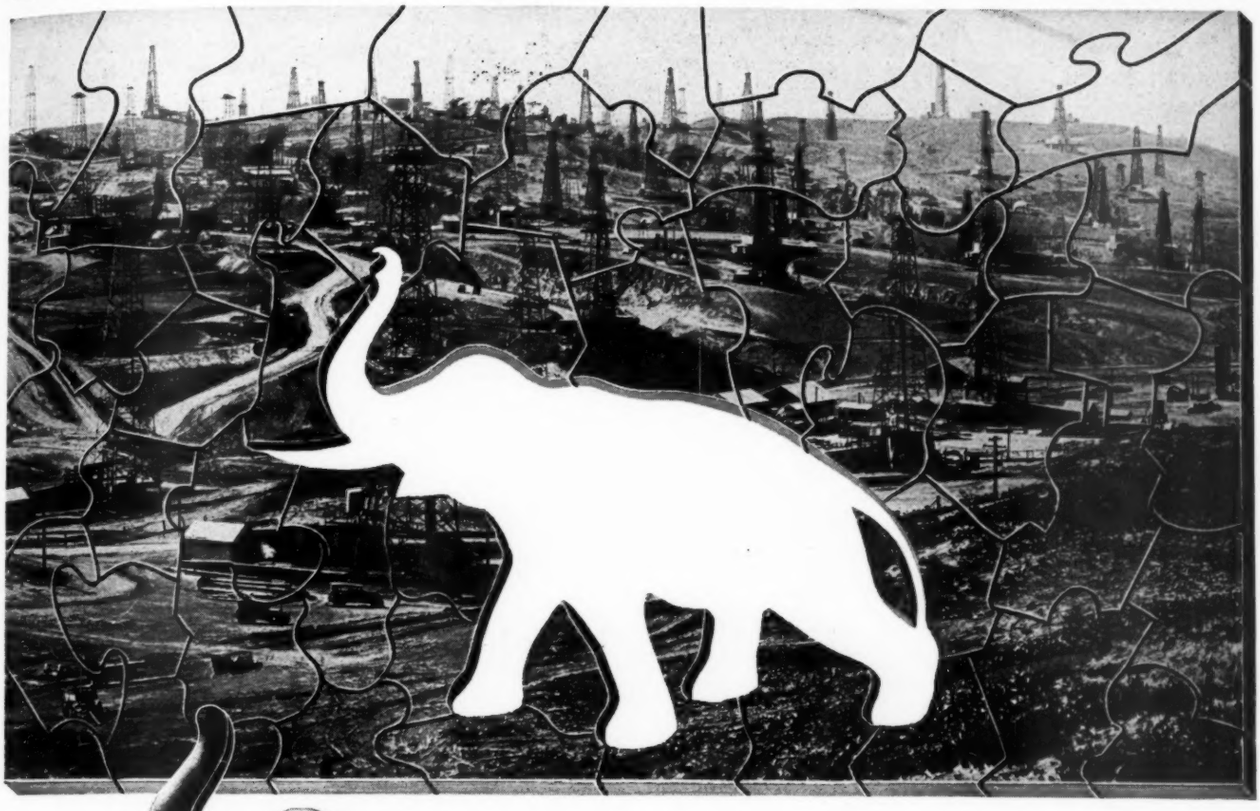

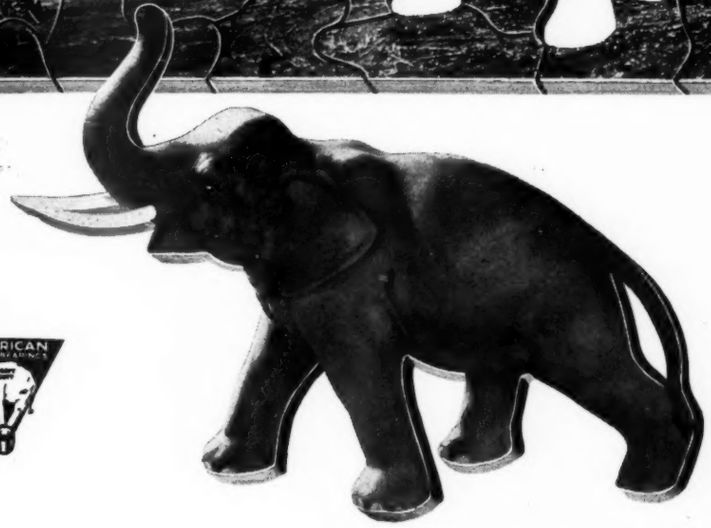

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bill a discount of ten percent was allowed, with a minimum bill of 50 cents per month.

●

Bids for Oil Drilling in Portugal

According to the Portugese press, the government is giving consideration to the bids of three competitors interested in obtaining concessions to explore for and exploit deposits of hydro-carbons and bitumen in Portugal. The Anglo Ecuadorian Oilfields, Ltd., is one of the applicants submitting bids.

●

California's Tideland Situation Still Not Settled

The problem of tideland drilling at Huntington Beach, California, is still unsettled. First, the Olson Bill was passed, then the O'Donnell Bill, and it was supposed that the matter was settled. Now, however, petitions have been started against both bills, and if they receive the requisite number of signatures it is expected the measures will be suspended until they can be voted upon, which will be at the next general election in November, 1938. Meantime the tideland situation will remain as it is with no great development possible.

●

Pennsylvania Grade Crude Prices Decline

Prices for Pennsylvania Grade crude oil have declined 22 cents in all districts except Corning, the decline in the latter area being 15 cents. New quotations are: Bradford, $2.60 a bbl.; Southwest Pennsylvania, $2.30; Eureka, $2.25; Buckeye, $2.10; and Corning, $1.27.

●

163 Rodessa Wells Making Salt Water

A survey made the latter part of August reveals 163 wells in the Rodessa field making varying amounts of salt water. Of the total, 131 are on the Louisiana side of the field, 29 are in Cass County, Texas, and three are in Marion County, Texas. Of those showing water in Louisiana, 16 were listed as "off production," four as dead, and two as gas wells. In Cass County, two were given as dead and two were pumping.

●

Crude Oil Production in Germany

The production of crude oil by Germany, according to the latest available official statistics, totaled 247,100 bbl. in May, which represented a decrease of approximately 0.8 percent under the preceding month of April, and an advance of only one percent over the yield of May, 1936. The average monthly output in 1936 was approximately 259,378 bbl. in comparison with 250,649 bbl. in 1935.

During the first five months of 1937, production totaled 1,240,092 bbl., about 0.6 percent below the yield of 1,247,393 bbl. in the corresponding period of 1936.

Of Germany's total production, Hannover contributed 1,131,627 bbl., or approximately 91.3 percent, and the Nienhagen-Haenigsen-Obershagen district accounted for 82.8 percent of this yield. Although the production of the latter district increased from 917,196 to 938,917 bbl., that from the Wietze-Steinfoerde district declined from 139,461 to 129,234 bbl.; at Oberg, from 68,495 to 63,476 bbl., and in the remaining oil-producing districts from 122,241 to 108,465 barrels.

●

Crude Oil Production in Iraq

According to official sources, crude petroleum produced in Iraq during the fiscal year ended March 31, 1937, was as follows: Iraq Petroleum Company, Ltd., 27,563,000 bbl.; Khanaqin Oil Company, Ltd., 745,000 bbl., and British Oil Development Company, 139,000 barrels. During the same period 30,525 metric tons of bitumen were produced in Iraq.

●

Kansas Issues Gas Waste Order

The Kansas State Corporation Commission has issued an order aimed at curtailment of gas wastage. A production ratio of 5000 cu. ft. of gas to each bbl. of oil has been fixed as the maximum allowable, it being held that gas has been excessively produced from wells in the Otis field, eastern Rush County. Variation from this established ratio is permissible where produced gas is paid for, and gas production is in proportion to open flow or potentials as determined for every well in the field.

●

Intangible Levy Certified for 17 Texas Pipe Lines

The State Tax Board of Texas has certified intangible assets assessments of $24,085,059 against 17 oil pipe lines. Assessments against companies that had not obtained injunctions were certified. Last year the tax board made assessments of $52,303,500 against pipe lines but was restrained from certifying $30,777,000.

Assessments this year were increased on 11 lines, while on three they were decreased, and three not assessed last year were included. Those whose assessments were decreased are the Pure Transportation Company, Yount-Lee Pipe Line Company, and Reagan County Purchasing Company. New ones on the 1937 assessment list are United Pipe Line Company, Houston, $150,000; Sinton Pipe Line Company, Houston, $127,260; and American Liberty Pipe Line Company, Dallas, $328,310.

Sinclair Refining Company of Independence, Kansas, received an assessment of $7,290,620, largest of those certified, and an increase from $6,892,500 last year. The largest increase, however, was against the Arkansas Pipe Line Company, whose assessment was increased from $175,000 to $782,700.

Other 1937 assessments and those of 1936, respectively, were:

Gulf Refining Company, $3,163,260 and $2,000,000; Shell Pipe Line Corporation, $4,661,355 and $4,215,000; Sun Pipe Line Company, $1,827,919 and $1,550,000; Pure Transportation Company, $2,694,015 and $3,000,000; Tidal Pipe Line Company, $1,035,295 and $630,000; Paso-Tex Pipe Line Company, $200,000 and $115,000; Republic Pipe Line Company, $443,850 and $300,000; Yount-Lee Pipe Line Company, $585,475 and $754,000; Pan-American Pipe Line Company, $575,000 and $300,000; Standish Pipe Line Company, $50,000 and $25,000; Valley Pipe Line Company, $125,000 and $90,000; Regan County Purchasing Company, $45,000 and $1,000,000; and Arkansas Pipe Line Company, $782,700 and $175,000.

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The Month's Activities In Refining

Percent Refinery Capacity Operated

Western Division, 79.8 Percent **Central Division, 85.1 Percent** **Eastern Division, 84.0 Percent**

THE Lucien Community Block, operating the community tracts in the Lucien field of Noble County, Oklahoma, announces plans for the enlargement of its natural gasoline plant. New gas-gathering and residue gas return lines will be laid and the present system enlarged. The enlarged plant will be capable of handling more than 20,000,000 cu. ft. of gas daily, with an output of approximately 40,000 gal. of 26-70 grade natural gasoline daily.

•

The Shell Oil Company will replace a battery of several topping units at its Martinez refinery at San Francisco, California, with a new topping unit. The latter will be operated in conjunction with a vacuum unit installed recently. A feature of the new equipment will be its flexibility, making possible the processing of various grades of northern California crudes.

•

The refinery of the Bay Petroleum Corporation, south of Denver, Colorado, is nearing completion. It will operate on high-gravity crude from Oklahoma. Equipment consists of a 1650-bbl. skimming unit and a 900-bbl. Dubbs cracking unit. Construction is under contract to the Ampco Engineering Company, Dallas, Texas.

•

Co-Service Oil, Inc., a new company, is constructing a refinery in the Bellevue field, Bossier Parish, Louisiana, for the manufacture of lubricating oil. Douglas McDonald is head of the company.

•

Freeman W. Burford, president of the East Texas Refining Company, has announced plans for the erection of a natural gasoline plant in Miller County, Arkansas, the new extension area of the Rodessa field.

•

E. I. du Pont De Nemours and Company have begun manufacture of Ethyl and "Q" fluids at their new plants at Baton Rouge, Louisiana. These are the first plants to begin operation under Governor Leche's industrial plan of granting tax exemptions for a period of years to encourage the state's industrial growth. The plants will be exempt from taxes for a period of ten years.

•

Petroleum Engineering, Inc., of Tulsa, Oklahoma, has been awarded the contract for constructing a natural gasoline plant in the Sulphur Bluff field of Texas for the Humble Oil and Refining Company. The plant, which will be a combination compressor-absorption unit, will have a daily capacity of 15,000,000 cu. ft. of gas.

•

The Portex Oil Company, Portland, Oregon, with extensive holdings in northeast Shelby County, Texas, announces it will begin construction of a natural gasoline plant at an early date. The announcement followed the completion of the company's third gas distillate well, No. 3 Pickering, having an estimated yield of 15,000,000 cu. ft. of gas daily. Announcement of the proposed construction was made several weeks ago, but initial activity was delayed pending completion of No. 3 Pickering.

•

The Aldon Gasoline Company's new natural gasoline plant in the Stone area of the Burrton field, Kansas, is nearing completion. It is situated near Haven and will handle approximately 10,000,000 cu. ft. of gas daily. It will be of the vapor-rectification type.

•

The Phillips Petroleum Company and the Shell Petroleum Corporation will erect a natural gasoline plant having a capacity of from 10,000 to 15,000 gal. of gasoline daily in the Billings pool of Noble County, Oklahoma. The Phillips company will operate the plant, which will be on community leases of the two firms.

Crude Runs to Stills, Gasoline and Gas and Fuel Oil Stocks

Week Ended September 4, 1937

A.P.I. Figures

(Figures in Barrels of 42 Gal. Each)

DISTRICT	Percent Potential Capacity Reporting	Daily Avg. Crude Runs to Stills	Percent Operated of Total Capacity Reporting	Total Motor Fuel Stocks Thousands of Bbl.	Gas and Fuel Oil Stocks Thousands of Bbl.
East Coast	100.0	583,000	87.1	19,018	13,975
Appalachian	88.4	100,000	77.5	2,575	897
Ind., Ill., Ky.	92.4	427,000	87.3	10,636	7,032
Okla., Kans., Mo.	84.7	329,000	85.9	6,413	3,584
Inland Texas	56.6	159,000	79.1	1,740	1,843
Texas Gulf	95.5	755,000	99.7	7,570	10,357
La. Gulf	96.6	143,000	85.1	1,946	2,963
No. La.-Ark.	63.7	44,000	75.9	419	380
Rocky Mt.	69.7	53,000	85.5	1,325	777
California	90.9	553,000	74.1	11,786	68,385
Reported	88.9	3,146,000	85.9	63,428	110,193
Est'd Unreported	.....	299,000	.....	3,620	3,250
*EST'D TOTAL U.S. Sept. 4, '37	.....	3,445,000	.....	67,048	113,443
*EST'D TOTAL U.S. Aug. 28, '37	.....	3,425,000	.....	66,997	112,111
*U. S. B. of M. Sept. 4, 1936	.....	**3,029,000	.....	59,270	112,818

*Estimated Bureau of Mines' basis.

**September, 1936, daily average.

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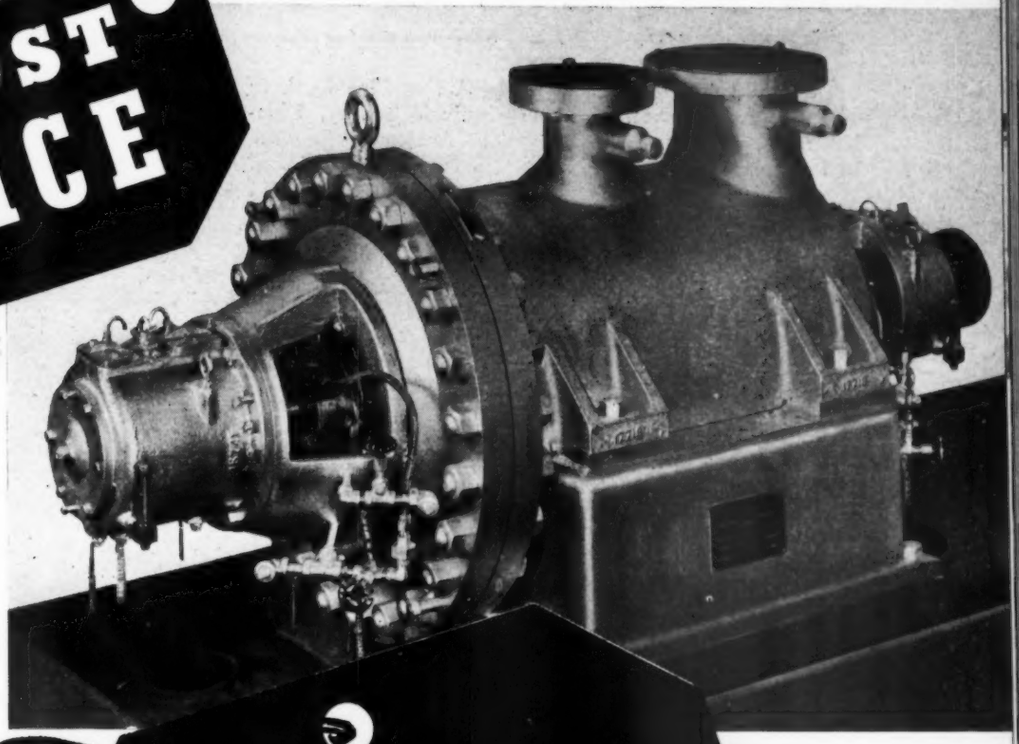

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Latest Activities In The Oil Fields

A NEW pool has been opened by W. B. Pine south of Sasakwa in southeastern Seminole County, Oklahoma. The discovery well is Pine No. 1 Amason, in SEC SW of 15-6-6e. Production of 300 bbl. an hour of 38.7 gravity oil was obtained from the second Wilcox sand at a depth of 3763-3781 feet.

•

The Cotton Valley field in Webster Parish, Louisiana, was extended a mile to the southwest by the completion of the Standard Oil Company of Louisiana and A. G. Oliphant No. 1 Stewert, section 32-21-10, which flowed 400 bbl. of distillate and 5,000,000 cu. ft. of gas through 17/64-in. choke from a total depth of 8700 feet.

•

Interest in the old Marrs-Butler field of Pennsylvania, abandoned for 40 years, will probably be revived because of the successful completion of G. L. Yaste's well on the United Presbyterian Orphanage property near Valencia, Butler County, as initial production totaled 100 bbl. daily.

•

The first flowing well in Pennsylvania since 1917 was brought in by Niagara Oil Company, subsidiary of the Forest Oil Company, nine miles south of Bradford. The well came in out of control, flowing at the rate of 7000 bbl. a day from the Bradford second sand at a depth of 1600 feet.

•

A new oil sand in the McFaddin field, Victoria County, Texas, which may prove to be of importance was discovered in the Transwestern Oil Company No. 1-E A. M. McFadden. Production of 200 bbl. daily of 26-gravity oil was obtained from sand in the Catahoula formation at a total depth of 4413 feet.

Duncan Oil Company's No. 1 Carroll, NE NE SW 8-2n-8e, extended the Clay City field in the Illinois Coal Basin two miles southward. It flowed at the rate of 1850 bbl. daily from the McCloskey sand.

•

The Marysville Buttes field in Sutter County, California, promises to become an important gas-producing area. The Buttes Oilfields, Inc. No. 4, 14 miles west of Marysville on the south flank of the Buttes, produced 25,000,000 cu. ft. of gas at 3100-lb. pressure from a total depth of 5855 ft. when tested immediately following completion. The producing zone is a solid, compact Cretaceous sandstone. Present plans call for deepening the No. 3 well to the same formation, some 450 ft. below the present depth of No. 3.

•

The second Pennsylvania gusher within a week was brought in by J. R. Orndorf near Waynesburg in southwestern Pennsylvania. The well flowed by heads at the rate of 30 bbl. an hour, and produced approximately 1,000,000 cu. ft. of gas with the oil, from the Ninevah Thirty-Foot sand, topped at 3187 feet.

•

The Wasson area has been extended well into southern Yoakum County, Texas, by wells drilled by Denver Producing and Refining Company and The Texas Company. The Denver company's No. 1 Whittenburg flowed by heads from broken lime at a depth of 4960-5015 ft. prior to acid treatment. It is approximately six and one-quarter miles northwest of the discovery well, NW NW Section 831, Block D. The Texas Company's No. 1 W. F. Walker, SE SE Section 794, Block D, is situated about three and one-half miles west by north of the Whittenburg well. It tested three-fourths bailer of oil per hour from broken lime at a depth of 4916-5107 ft., and will be acidized.

AVERAGE CRUDE PRICES

California	
Kettleman Hills	$1.19-1.43
Playa Del Rey	.80-1.16
Coalinga	.70- .90
Signal Hill	.80-1.21
Montana	1.35
Wyoming	.97-1.30
Colorado	1.12-1.18
New Mexico	.78-1.08
Texas	
North Central	.96-1.20
Panhandle	.91-1.08
West Texas	.78-1.08
Gulf Coast	.95-1.41
Darst Creek	1.09
East Texas	1.35
Talco	.73
Kansas	.98-1.30
Oklahoma	.98-1.30
Arkansas	.90
Louisiana	
Rodessa	$ .91-1.25
Gulf Coast	.84-1.41
North Louisiana	.90-1.22
Illinois	1.35
Kentucky	1.40
Indiana	1.12
Ohio	
Lima	1.25
Michigan	1.27
Pennsylvania	
Bradford	2.60
Southwest	2.30
Eureka	2.25
Buckeye	2.10
Corning	1.27
West Virginia	1.67
Canada	2.10-2.17

DAILY AVERAGE CRUDE OIL PRODUCTION

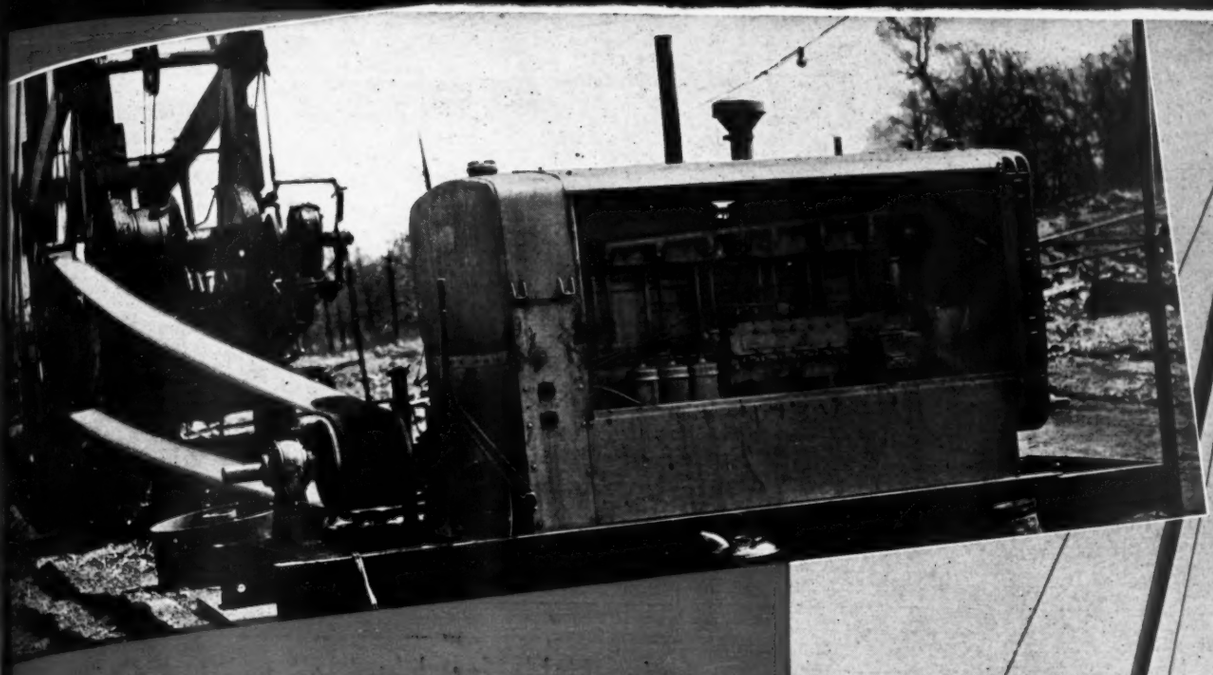
Data Supplied by A.P.I.

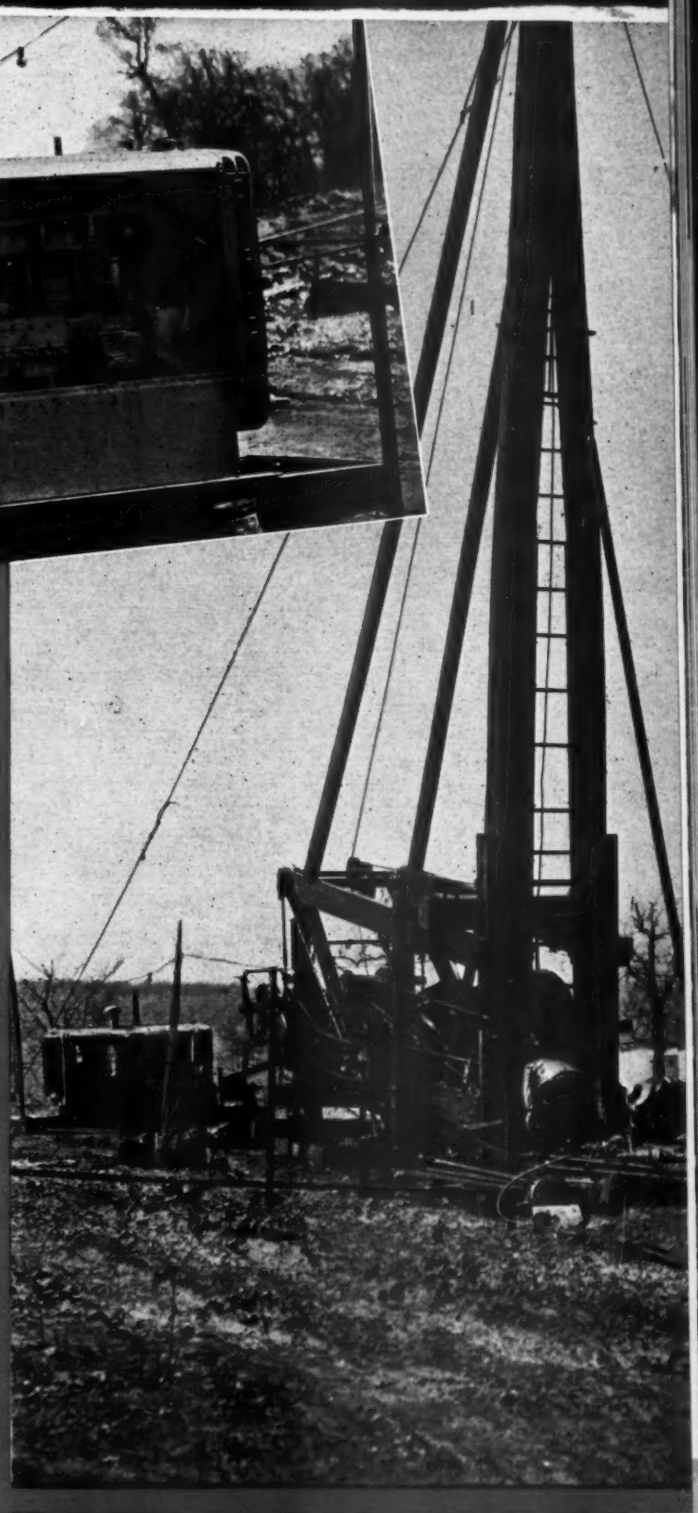
(Figures in Barrels)

	B. of M. Dept. of Int. Calculations (September)	Actual Week Ended Sept. 4, 1937	Week Ended July 31, 1937	Week Ended Sept. 5, 1936
Oklahoma	633,600	639,500	637,650	588,750
Kansas	200,900	192,550	207,150	156,500
Panhandle Texas	.....	80,150	90,950	65,150
North Texas	.....	74,850	73,200	61,750
West Central Texas	.....	33,800	33,600	26,500
West Texas	.....	232,850	205,950	178,400
East Central Texas	.....	127,450	125,300	58,450
East Texas	.....	474,450	470,800	433,800
Southwest Texas	.....	264,700	238,700	163,750
Coastal Texas	.....	221,750	205,500	182,600
TOTAL TEXAS	1,413,600	1,510,000	1,433,000	1,170,400
North Louisiana	.....	88,950	91,850	82,900
Coastal Louisiana	.....	176,150	172,200	152,100
TOTAL LA.	247,900	265,100	264,050	235,000
Arkansas	29,900	36,300	28,700	28,200
Eastern	124,300	140,800*	122,200	115,300
Michigan	40,400	48,550	45,100	31,450
Wyoming	55,900	54,200	56,700	40,450
Montana	18,200	17,850	18,300	19,100
Colorado	5,000	4,800	5,000	5,050
New Mexico	101,400	114,200	114,450	78,050
TOTAL EAST OF CALIF.	2,871,100	3,023,850	2,932,300	2,438,250
California	638,200	668,700	659,600	570,300
TOTAL U. S.	3,509,300	3,692,550*	3,591,900	3,008,550

*Production for week ended August 28th revised to include more complete information on new pools in Southern Illinois. New figures are as follows: Eastern, 139,650 bbl.; Total United States, 3,745,500 barrels.

"CATERPILLAR" DIESEL—THE POWER FOR SAVINGS AND SERVICE





HERE'S a portable spudder rig, owned by the Wayne Hammon Drilling Company, Wichita Falls, driven by a 125-hp. "Caterpillar" Diesel Engine on less *than three dollars' worth of fuel and lubricating oil per 24-hour day* . . . an operating cost usually exceeded by two, three and even four times that amount with other types of power.

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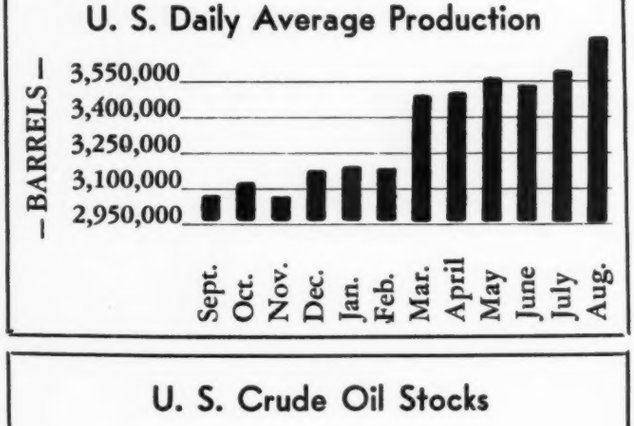
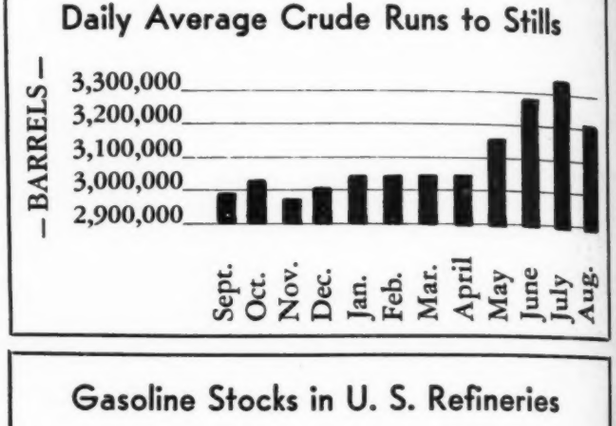
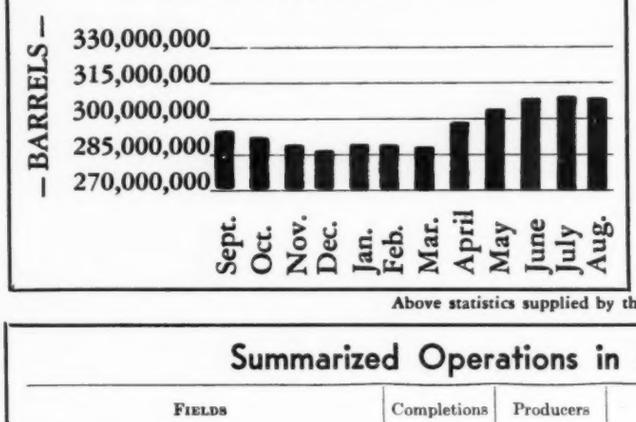
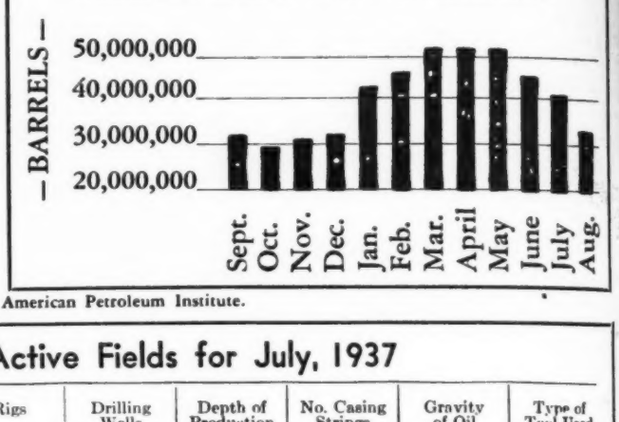
Summary of Petroleum Statistics and Field Activities









Above statistics supplied by the American Petroleum Institute.

Summarized Operations in Active Fields for July, 1937

Fields	Completions	Producers	Rigs	Drilling Wells	Depth of Production	No. Casing Strings	Gravity of Oil	Type of Tool Used
Texas								
East Texas	251	245	65	90	3500-3700	2	40	Rotary
Duval County	63	53	19	58	1534-2900	2	22	Rotary
Archer County	24	10	3	13	660-1800	1 or 2	40	Rot.-Cab.
Panhandle	79	76	51	180	1700-3000	2	40	Rotary
Refugio	23	19	5	15	4900-5900	2	38	Rotary
Nueces County	46	39	23	63	3922-5878	2 or 3	21-54	Rotary
Winkler County	58	55	8	58	2850-3450	2 and 3	30-38	Rot.-Cab.
Talco Field	59	58	10	43	4230-4361	2	16-24	Rotary
Oklahoma								
Oklahoma City	2	2	1	6	6450-6682	3	39	Rotary
Fitts Pool	62	54	7	41	1800-4488	2 or 3	38	Rotary
Osage County	32	23	4	26	380-2850	2	37.5-40	Rot.-Cab.
Kansas								
Russell County	56	52	10	55	2926-3435	2 and 5	32-37	Rot.-Cab.
Rice County	43	36	8	49	3222-4085	2 and 5	42-48	Rot.-Cab.
Reno County	16	14	4	19	3300-4375	2 and 5	42-48	Rot.-Cab.
Louisiana-Texas								
Rodessa	34	34	14	52	5950-6450	3	39	Rotary
New Mexico								
Lea County	59	52	32	121	3150-4030	3	30-34	Rot.-Cab.
California								
Kettleman Hills	3	3	4	11	8300-8730	3 or 4	40	Rotary
Wilmington	47	47	32	36	3500-4000	2 and 3	18-20	Rotary

Field Activities by States for July, 1937

State	Completions		Producers		Locations		Rigs		Drilling Wells		Production, 1936 (In Barrels)
	August	July	August	July	August	July	August	July	August	July	
Arkansas	22	8	14	2	34	32	18	24	64	62	10,461,000
California	121	150	97	129	146	150	143	120	282	304	214,883,000
Colorado	2	....	1	....	....	....	3	3	41	39	1,670,000
Illinois	....	27	....	18	....	....	....	66**	....	52	4,452,000
Indiana	17	12	14	6	....	....	2	2	25	29	795,000
Kansas	283	267	228	201	267	293	73	71	417	431	58,226,000
Kentucky	41	60	32	46	....	....	13	21	78	81	5,653,000
Louisiana	148	73	113	53	135	104	48	55	255	280	79,980,000
Michigan	89	106	65	87	83	93	88	98	173	174	11,852,000
Mississippi	4	....	0	....	....	....	5	5	12	13	Gas Prod.
Montana	33	21	29	15	....	....	7	6	67	66	5,632,000
New Mexico	73	58	64	53	....	....	40	19	171	154	27,134,000
New York	....	....	....	....	....	....	....	....	....	....	4,637,000
Ohio	179	122	133	84	....	....	81	93	222	269	3,834,000
Oklahoma	260	348	193	266	226	280	60	64	420	448	206,082,000
Pennsylvania	....	....	....	....	....	....	....	....	....	....	15,830,000
Texas	1467	1416	1159	1133	1614	1659	503	562	1862	1951	391,097,000
West Virginia	97	79	76	67	....	....	34	29	187	162	3,903,000
Wyoming	18	6	8	3	....	....	16	15	75	69	13,650,000
Total	2854	2753	2226	2143	2505	2631	1134	1262	4351	4625	993,942,000

**Including 41 rigs standing and 25 rigging up.

Thirty years ago, W. M. Fulton made his first trip to Montana. A group of cowboys, boiling their coffee over a natural gas seepage on Willow Creek, captured his attention and established a determination to prospect for gas. The final outcome of the resulting search was the discovery of the great Kevin-Sunburst field.

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OIL AND GAS WELL CHEMICAL SERVICE

Progress of Major Pipe Line Work

DUVAL Pipe Line Company's 70-mile line from the North Sweden field of Duval County, Texas, to Corpus Christi, is expected to be completed by the last of September. The line has its terminus at the Republic Pipe Line Company's terminal. Williams Brothers of Tulsa, Oklahoma, are the contractors for the job.

●

Williams Brothers of Tulsa, Oklahoma, have been awarded the contract for laying 160 miles of pipe line in South Louisiana for the Standard Oil Company of Louisiana. The line will extend from the Standard's tank farm at Baton Rouge, on the west bank of the Mississippi River, to Sunset, Louisiana, where it will divide, one line going to the Roanoke field, the other to Jeanerette. Plans call for the laying of 25 miles of 10-in. pipe, 63 miles of 8-in., and 72 miles of 6-inch. At Sunset a pumping station will be erected. The capacity of the line will be 20,000 bbl. daily.

●

The Lone Star Gas Company has announced it will construct a 20-mile 18-in. gas line from the Buffalo gas field, Leon County, Texas, to tie into a 12-in. line that connects the Long Lake field with the company's Central Texas system. The Lone Star Gas Company recently purchased operating control of the Buffalo field, from which sweet gas is produced.

●

The Humble Pipe Line Company plans to extend its 6-in. line from Hobbs, New Mexico, to the Wasson area of northwestern Gaines County, it is announced. From the latter area the line will then be continued northward to the Bennett pool of Yoakum County, and quite likely still farther north to certain Permain Basin pools that long have been without outlets.

It is stated that Humble has purchased the pipe for the line and completed its survey. From Hobbs to the Wasson area is approximately 25 miles, and from Wasson to the Bennett area 12 miles.

●

It is reported that the Caddo Pipe Line Corporation, subsidiary of the Grogan Oil Company, Shreveport, Louisiana, will give the Lisbon field of Claiborne and Lincoln parishes of Louisiana a second pipe line outlet. A 6-in. line will be laid from Lisbon to Homer to connect with the Louisiana Oil Refining Corporation's Haynesville to Shreveport line, it is stated. Crude oil from the Lisbon field will be transported to the Rodessa Oil Refining Corporation's refinery at Cedar Grove, a suburb of Shreveport.

●

The Wabash Pipe Line Company has been incorporated in Illinois by D. D. Irwin, president of the Pure Transportation Company, and other officials of the Pure Oil Company, and application made to the Illinois Commerce Commission for the right to construct a 45-mile line from a point east of the town of Noble to a tank farm at Martinsville, Illinois, where it will connect with the trunk line of the Illinois Pipe Line Company.

●

The American Liberty Pipe Line Company of Dallas, Texas, has announced plans for giving the Sulphur Bluff field of Hopkins County, Texas, its third pipe line outlet. A 6-in. line will be laid from the field to the Cotton Belt Railroad at Weaver. Capacity of the line will be 10,000 bbl. daily. It will run almost due south from the company's pump station on the Susan B. Pierce tract on the south edge of the field.

●

The H. C. Price Company, Bartlesville, Oklahoma, announce they have been awarded contracts for electric welding and have started construction on the following pipe lines:

From Ligon & Ligon, 45 miles of 12-in. in West Virginia for Godfrey L. Cabot, Inc.

From Standard Oil Company of Ohio, 37 miles of 6-in. from Fostoria to Toledo.

From Kelly-Dempsey Company, 64 miles of 6-in. from Cleveland to Canton for the Standard Oil Company of Ohio.

From B & M Construction Corporation, 52 miles of 8-in. and 10-in. in Illinois for the Pure Oil Company.

From Williams Brothers Corporation, 142 miles of 6-in., 8-in., and 10-in. in Louisiana for the Standard Oil Company of Louisiana.

From Ford, Bacon & Davis Construction Corporation, four 10-in. lines across the Mississippi River near Yazoo City, Mississippi, for the Southern Natural Gas Company.

All of these lines are to be electric welded, using the Fleetweld process.

●

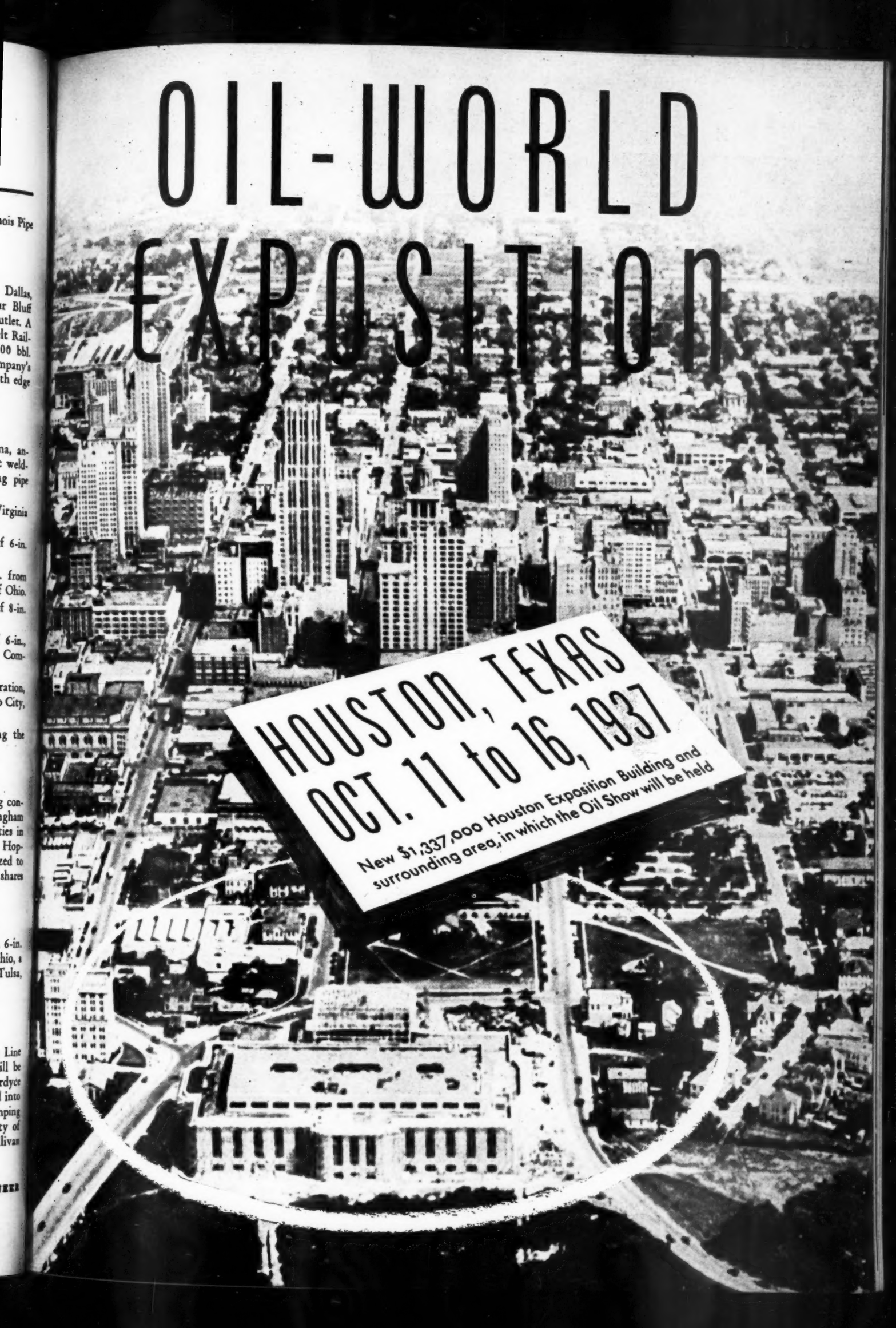
The Dominion Gas Company of Virginia is planning construction of a 682-mile pipe line, originating in Rockingham County, Virginia, and transporting natural gas to cities in the central and eastern part of the state. Charles M. Hopkins is head of the company, which has been authorized to issue under its present charter a maximum of 10,000 shares of stock at $1 par.

●

Standard Oil Company of Ohio has announced that a 6-in. gasoline line will be laid from Cleveland to Canton, Ohio, a distance of 64 miles. The Kelly-Dempsey Company of Tulsa, Oklahoma, has been given the construction contract.

●

H. H. Hensley, general manager of the Valley Pipe Line Company, has announced that a 16-mile extension will be made to the company's 5½-in. line from the Sam Fordyce field of Texas to Point Isabel. The line will be extended into the El Tanque field of southern Starr County. A pumping station will be erected in the latter field. The capacity of the line will be 7500 bbl. daily. Dobbs and Dobbs of Sullivan City have been awarded the contract.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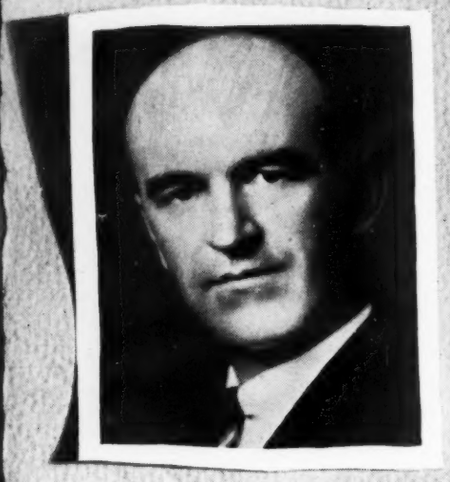
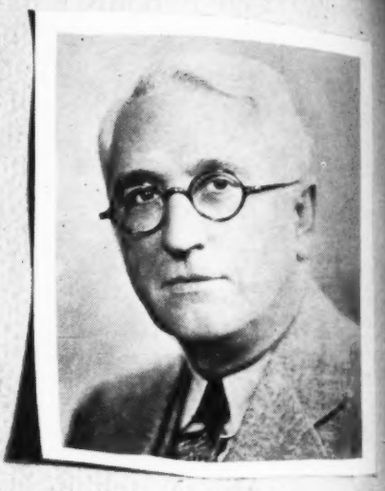
OFFICERS

OIL-WORLD EXPOSITION, INC.



CHASE SUTTON
Executive Vice President

JOHN R. SUMAN
President



W. L. CHILDS
Vice President

J. S. ABERCROMBIE
Vice President

WALLACE WILSON
Vice President

ED. G. LENZNER
General Manager

GEORGE A. HILL, JR.
Vice President

RAY L. DUDLEY
Secretary-Treasurer

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Houston, Texas

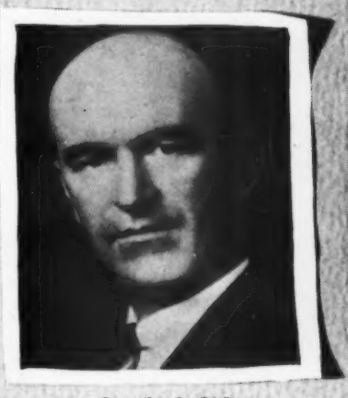
S. P. BROWN
Vice Pres., Hughes Tool Co.,
Houston, Texas

FRANK S. CAROTHERS
Branch Mgr., Norvell-Wilder
Supply Co., Houston, Texas

W. L. CHILDS, Vice Pres.,
Reed Roller Bit Company,
Houston, Texas

WALLACE WILSON
President, Wilson Supply Co.,
Houston, Texas

RAY L. DUDLEY
Pres., Gulf Publishing Co.,
Houston, Texas



CHASE SUTTON
Division Mgr., Pure Oil Co.,
Houston, Texas

JOE H. RUSSELL
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Houston, Texas

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Pres., Mission Mfg. Co.,
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Pres., Houston Oil Co.,
Houston, Texas

R. SUMAN, Vice Pres.,
Oil & Refining Co.,
Houston, Texas

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Pres., J. S. Abercrombie Co., Houston

RICHARD BLOSS, Pres., International Derrick & Equip. Co., Beaumont

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S. P. BROWN, Vice Pres., Hughes Tool Co., Houston

AL BUCHANAN, Pres., A. A. Buchanan Drlg. Co., San Antonio

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OIL-WORLD EXPOSITION, INC.

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Branch Manager, Norvell-Wilder Sup. Co., Houston

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H. J. CRAIG, Sales Mgr., Baash-Ross Tool Co., Houston

JOHN T. CROTTY, Pres., Republic Supply Co., Houston

T. J. DONOGHUE
Vice Pres., The Texas Co., Houston

J. B. FLEMING
Houston Lighting & Power Co., Houston

JULIUS FOHS, Pres., Fohs Oil Co., Houston

HARRY C. HANSZEN
Oil Operator, Houston

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Vice Pres., United Gas Public Service Co., Houston

D. B. McDANIEL, Owner, Gulf Coast Drilling & Production Co., Houston

S. T. CHILDRESS,
Vice Pres., Rio Bravo Oil Co., Houston

W. L. CHILDS, Vice Pres., Reed Roller Bit Co., Houston

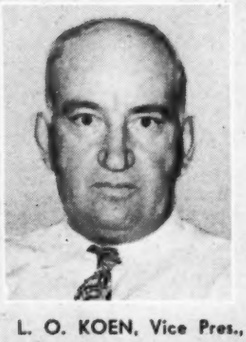
W. H. CURTIN, Pres., W. H. Curtin & Co., Houston

K. W. DAVIS, Pres., Mid-Continent Sup. Co., Fort Worth

RAY L. DUDLEY, Pres., Gulf Publishing Co., Houston

H. W. GWILLIAM
Vice Pres., Ohio Oil Co., Houston

GEORGE A. HILL, JR.
Pres., Houston Oil Co., Houston



L. O. KOEN, Vice Pres., W-K-M Co., Inc., Houston

GAGE LUND, Mgr., Standard Oil Co. of Texas, Houston

A. M. McCORK[illegible]
Vice Pres., Stanolind & Gas Co., Hou[illegible]

A. T. McDANNALD
Owner,
Smith & McDannald,
Houston

ROBERT J. MILLER
Owner, Robert J. Miller
Co., Houston

H. W. MILLMINE, Pres.,
Texas Rubber & Specialty
Corp., Houston

C. B. MOORE
Frick-Reid Supply Corp.,
Houston

DANIEL J. MORAN
Pres., Continental Oil Co.,
Houston

MARTIN O'BRIEN
Vice Pres., Republic
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Houston

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Sun Oil Co., Beaumont

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Woodley Petroleum Co.,
Houston

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Vice Pres., Texas Iron
Works, Houston

TOM PEW, Vice Pres.,
General Crude Oil Co.,
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Magnolia Petroleum Co.,
Beaumont

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Houston

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Res. Manager, National
Supply Co., Houston

R. A. MUELLER, Pres.,
Gray Tool Co.,
Houston

GEORGE O'LEARY, Pres.,
Houston Oil Field Material
Co., Houston

M. W. PHELPS
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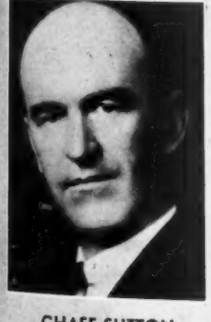
ED SALRIN, Vice Pres.,
Tidewater Oil Co.,
Houston

W. B. SHARP, Pres.,
Mission Mfg., Co.,
Houston

JOHN R. SUMAN
Vice Pres., Humble Oil &
Refg. Co., Houston



CHASE SUTTON
Div. Mgr., Pure Oil Co.,
Houston

T. E. SWIGART,
Vice Pres., Shell Petroleum
Corp., Houston

F. H. THRAILKILL
Dist. Mgr., Continental
Supply Co., Houston

W. C. TROUT, Pres.,
Lufkin Foundry & Mach.
Co., Lufkin

WALLACE WILSON
Pres., Wilson Supply Co.,
Houston

Daily Program

Monday, October 11

1:30 P. M.—Official Opening Program, Coliseum.

7:00 P. M.—U. S. Army Band, Fort Crockett, Concert, Coliseum.

7:00 P.M.—U. S. Army Aviation Division Searchlight Display and Sound Detector Maneuvers, Coliseum.

Tuesday, October 12

2 to 4 P. M.—Directional Drilling Committee.
Drilling Committee—American Society of Mechanical Engineers.

7:30 P. M.—Humble Oil & Refining Company Glee Club, Coliseum.

1.30 P. M.—Chemists and Chemical Engineers Division Refinery Program.

7:00 P. M.—U. S. Army Aviation Division Searchlight Display and Sound Detector Maneuvers, Coliseum.

Wednesday, October 13

9:00 A. M. to 12 Noon and 1:30 P. M. to 5:00 P. M.—Conference on Refinery Measurement and Control.
Oil Industry Transportation Committee.

All Day—Oil Men's Golf Tournament —Brae Burn Country Club.

9:00 A. M.—Registration—Independent Petroleum Association Members, Rice Hotel.

7:30 P. M.—Oil Equipment Export Meeting and Dinner, Houston Club.

7:00 P. M.—U. S. Army Band, Fort Crockett, Concert, Coliseum.

7:00 P. M.—U. S. Army Aviation Division Searchlight Display and Sound Detector Maneuvers, Coliseum.

Thursday, October 14

9:00 A. M. to 12 Noon and 1:30 P. M. to 5:00 P. M.—Conference on Refinery Measurement and Control.
Oil Exposition Wrestling Match, Coliseum.

9:00 A. M.—Registration—Independent Petroleum Association Members, Rice Hotel.

7:30 P. M.—Humble Oil & Refining Company Glee Club, Coliseum.
Yacht Trip on Channel Through Houston Harbor to San Jacinto Battlegrounds and San Jacinto Inn.
Luncheon at San Jacinto Inn.
Oil Industry Transportation Meeting.

7:00 P. M.—U. S. Army Aviation Division Searchlight Display and Sound Detector Maneuvers, Coliseum.

Friday, October 15

9:00 A. M.—Registration—Independent Petroleum Association members, Rice Hotel.
"Petroleum Day"—Proclamation by Governor James V. Allred.

9:30 A. M. to 12 Noon and 1:30 P. M. to 5:00 P. M.—Refinery Meeting. (For further details see under "Refinery Engineering Conference").
Chemists and Chemical Engineers' Division of the Refinery Program.

7:00 P. M.—Annual Banquet, Independent Petroleum Association. Sponsored by Houston Wildcat Committee, Rice Hotel.

7:00 P. M.—U. S. Army Band, Fort Crockett, Concert, Coliseum.

7:00 P. M.—U. S. Army Aviation Division Searchlight Display and Sound Detector Maneuvers, Coliseum.

Saturday, October 16

New Patents and Inventions Committee, "Judging of New Patents".

12:30 Noon — Safety and First Aid Committee—Luncheon.

All Day—First Aid Contest, Coliseum.
Football Game—Rice Institute vs. Tulsa University, Rice Stadium.
Independent Petroleum Association.

7:30 P. M.—Humble Oil & Refining Company Glee Club, Coliseum.

7:00 P. M.—U. S. Army Aviation Division Searchlight Display and Sound Detector Maneuvers, Coliseum.

Papers Scheduled for Directional Drilling Program, and Refinery Conferences

DIRECTIONAL DRILLING PROGRAM

October 12

The program on directional drilling will be as follows:

1. "Historical Review of Production Experience on Deviated Wells" by H. John Eastman.
2. "Technique of Controlled Drilling" by Douglas Ragland, Humble Oil and Refining Company.
3. "Well Surveying Methods."
   (a) "Oriented Surveys" by Lane-Wells Company.
   (b) "Gyroscopic Surveys" by R. S. Hyer.
   (c) "Magnetic Surveys" by Eastman Oil Well Survey Company.
4. "Geological Application of Oriented Coring" sponsored by A. B. Patterson, The Texas Company.

CONFERENCE ON REFINERY MEASUREMENT AND CONTROL

October 13 and 14
Convention Hall, Exposition Bldg.

A two-day program consisting of four sessions will be held, sponsored by Rice Institute, University of Texas, and A. & M. College. Three professors from each of the three universities have been appointed to act as chairmen and supervise this entire program.

The program is as follows:

"Measurement and Control in Refinery Processes," by Phillip Darling, Pan American Refining Corporation.

"Measurement and Control in Natural Gasoline Plant Processes." Speaker to be named.

"Measurement of Flow," by A. F. Benson, American Meter Company, Erie, Pennsylvania.

"Measurement of Temperature by Thermometry," by A. J. Fleig, Taylor Instrument Companies, Rochester, New York.

"Potentiometer Pyrometry," by G. C. Graf, Leeds & Northrup Company, Philadelphia, Pennsylvania.

"Development Trend in Pyrometry," by C. O. Fairchild, C. J. Tagliabue Manufacturing Company, Brooklyn, New York.

"Selection of Valves for Automatic Control," by R. A. Engel, Fisher Governor Company, Marshalltown, Iowa.

"Measurement of Pressure," by M. J. Smith, Crosby Steam Gage & Valve Company, New York, New York.

"Regulation of Pressure," by Paul A. Condit, Mason-Neilan Regulator Company, Boston, Massachusetts.

"Liquid Level Regulation." Speaker to be announced.

"Control of Temperature," by H. M. Schmitt, Brown Instrument Company, Philadelphia, Pennsylvania.

"Control of Flow," by J. B. McMahon, Foxboro Company, Foxboro, Massachusetts.

The professors from each of the three universities are as follows:

Rice Institute: Dr. A. J. Hartsook, head of Department of Chemical Engineering; J. S. Waters, professor, Electrical Engineering Department; J. H. Pound, professor, Mechanical Engineering Department.

University of Texas: H. E. Degler, professor, Mechanical Engineering Department; M. N. Heller, professor, Mechanical Engineering Department; Byron E. Short, professor, Mechanical Engineering Department; H. H. Power, professor, Petroleum Production Engineering Department, will cooperate with the three professors of the University of Texas in the program.

Agricultural & Mechanical College: Dr. C. C. Hedges, head of Department of Chemistry and Chemical Engineering; F. F. Bishop, professor of petroleum technology, Chemistry and Chemical Engineering Department; C.

W. Crawford, professor, Mechanical Engineering Department.

REFINERY ENGINEERING CONFERENCE
Friday, October 15

Friday Morning—9:30 A. M. to 12 Noon—"Production of Organic Chemicals from Petroleum and Natural Gas" by Dr. C. R. Wagner, Dr. M. B. Cooke, and S. R. Swanson; the Pure Oil Company and Alco Products, Inc.

"Catalytic Polymerization and its Application in Refining" by Dr. Gustav Egloff, Universal Oil Products Company.

"Combination Selective Cracking" by Dr. E. R. Smoley, the Lummus Company.

Friday Afternoon—1:30 P. M. to 5 P. M.—"Metallurgy in Petroleum Refining Processes" by E. S. Dixon, The Texas Company.

"Gasoline Treating and Sweetening Processes" by Dr. C. W. Rippie, Solvay Sales Company.

"Extraction of Salts from Refinery Stocks by the Electrical Process" by T. N. St. Hill and G. B. Hanson, Petroleum Rectifying Company.

Meeting American Society of Mechanical Engineers

The Petroleum Division of the American Society of Mechanical Engineers will hold a meeting in connection with the Oil-World Exposition on the evening of October 12, 1937. The program will be under the sponsorship of the Exposition Drilling Committee of which Joe Russell of the Gulf Production Company is chairman.

Several papers covering the mechanical phases of the petroleum industry are now in preparation by members of the Houston Division of the American Society of Mechanical Engineers. The program is being handled by the Society's committee consisting of W. F. Herbert, The Texas Company, chairman; W. P. Preston, Texas Gulf Sulphur Company; W. W. Scott, Humble Oil and Refining Company; F. M. Leverett, The Texas Company; D. D. Alton, Southern Pacific Lines; A. B. Steen, Jr., Humble Pipe Line Company; and Nathan Janco, Reed Roller Bit Company.

Committees

Membership of the various committees is as follows:

Program Committee: R. L. Dudley, chairman; E. G. Lenzner, assistant chairman; and the following members: George A. Hill, Jr., president, Houston Oil Company; Chase Sutton, division manager, Pure Oil Company; and Frank Carothers, district manager, Norvell-Wilder Supply Company.

Directional Drilling Committee: G. B. Corless, Humble Oil and Refining Company, chairman; Alexander Anderson, Alexander Anderson, Inc.; H. John Eastman, Eastman Oil Well Survey Company; R. S. Hyer, Sperry-Sun Well Surveying Company; A. B. Patterson, The Texas Company; M. L. Cashion, Gulf Production Company; and D. B. Collins, Shell Petroleum Corporation.

Drilling Committee: Joe Russell, Gulf Production Company, chairman.

Production Committee: B. M. Nowery, United Gas Public Service Company, chairman.

Associations and Conventions Committee: Chas. Sutton, division manager, Pure Oil Company, chairman; Wm. V. Vietti, American Institute of Mining and Metallurgical Engineers; Carl Hickman, American Petroleum Institute, Gulf Coast Division; Phil F. Martyn, Houston Geological Society; W. B. Preston, American Society of Mechanical Engineers; A. T. McDannald, Drilling Contractors Meeting; C. E. Buchner, Independent Petroleum Association; James Anderson, Humble Oil and Refining Company; and George A. Hill, Jr., Houston Oil Company.

Safety and First Aid Committee: J. J. Delahide, E. D. Bullard Company, chairman; Geo. J. Gruber, Mine Safety Appliance Company; R. B. Roaper, Humble Oil and Refining Company; Claude Liles, Magnolia Petroleum Company; Pete Keegan, Shell Petroleum Corporation; Tom Brown, Gulf Production Company; Jerry Lockwood, Empire Oil and Refining Company; Cecil Hightower, United Gas Public Service Company; and C. A. Miller, The Texas Company.

New Patents and Inventions Committee: Lester B. Clark, patent attorney, chairman.

Attendance Committee: George A. Hill, Jr., Houston Oil Company, and W. L. Childs, Reed Roller Bit Company, chairmen; T. J. Donoghue, The Texas Company; A. M. McCorkle, Stanolind Oil and Gas Company; A. T. McDannald, Smith & McDannald; C. B. Moore, Frick-Reid Supply Corporation; B. M. Nowery, United Gas Public Service Company; George O'Leary, Houston Oil Field Material Company; C. R. Patterson, National Supply Company; M. W. Phelps, Oil Well Supply Company; Joe Russell, Gulf Production Company; T. E. Swigart, Shell Petroleum Corporation; and F. H. Thrailkill, Continental Supply Company.

Entertainment Committee: Frank Carothers, Norvell-Wilder Supply Company, chairman; Robert J. Miller, Robert J. Miller Company; George O'Leary, Houston Oil Field Material Company; and S. T. Childress, Rio Bravo Oil Company.

Oil Equipment Export Committee: Thomas E. Ward, president, Oilfield Equipment Company, Inc., chairman, and the following members:

P. A. Bogdanoff, president, Amtorg Trading Corporation, New York; J. W. Casterton, purchasing agent, Standard Oil Company of New Jersey, New York; J. A. de Lanoy, director of purchases, Asiatic Petroleum Corporation, New York; P. W. Fenton, purchasing agent, Tide Water Oil Company, New York; W. G. Foster, president, Anglo-American Purchasing Company, New York; W. J. Malloy, American representative, Oil Well Engineering Company, New York; H. B. Malone, director of purchases, Consolidated Oil Corporation, New York; E. B. Middlekauf, purchasing agent, The Texas Company, New York; J. S. Parks, purchasing agent, Atlantic Refining Company, Philadelphia, Pennsylvania; F. J. Petura, purchasing agent, Henry L. Doherty and Company, New York; H. Slater, purchasing agent, Venezuela Gulf Oil Corporation, New York; J. R. Taylor, purchasing agent, Socony Vacuum Corporation, New York; O. P. Wegner, engineer, Argentine Government Oil Fields, New York; J. A. Whitley, purchasing agent, Pan American Petroleum and Transport Company, New York; George W. Young, purchasing agent, Standard Vacuum Oil Company, New York; Clyde Ellwood, Fluid Packed Pump Company, formerly export manager, Axelson Machine Company; Jack Mellon, export manager, Byron Jackson Company; W. F. Huff, Bettis Rubber Company, formerly export manager National Supply Company; Robert J. Eiche, export manager, Los Angeles, California; and Bert R. Emrick, formerly general superintendent, Burmah Oil Company.

Refinery Committee: W. H. Curtin, W. H. Curtin & Company, chairman; Ed G. Lenzner, general manager, Oil-World Exposition, Inc., assistant chairman; O. E. Berg, Babcock & Wilcox Tube Company; M. N. Dannenbaum, M. N. Dannenbaum Company; R. L. Mallory, Brown Instrument Company; Joe Miller, Humble Oil & Refining Company; Joe Peddie, Maintenance Engineering Corporation; and George Reid, Editor, Refiner magazine.

Refinery Advisory Board: J. J. Allinson, vice-president and refinery manager, Lion Oil Refining Company, El Dorado, Arkansas; I. A. Anson, general manager, Solvex Refineries, Inc., Gladewater, Texas; Guy Barritt, Danciger Oil and Refineries, Inc., Pledger, Texas; J. R. Barrott, superintendent,

Ohio Oil Company, Fort Worth, Texas; Frank W. Bennett, president, Bennett Refining Company, Houston, Texas; O. H. Berryman, General American Oil Company, Gladewater, Texas; O. B. Bingham, H. H. Cross Company, Smackover, Arkansas; C. H. Christman, superintendent, Atlas Pipe Line Company, Shreveport, Louisiana; R. G. Collins, The Texas Company, West Dallas, Texas; S. W. Darling, The Texas Company, Houston, Texas; F. S. Dengler, The Texas Company, Port Neches, Texas; C. S. Dickens, Magnolia Petroleum Company, Corsicana, Texas; J. T. Dickens, Magnolia Petroleum Company, Luling, Texas; P. E. Foster, refinery manager, Shell Petroleum Corporation, Norco, Louisiana; W. F. Fulton, United Gas Public Service Company, Houston, Texas; J. K. Gibson, superintendent, Phillips Petroleum Company, Pasadena, Texas; Fred W. Gray, superintendent, Pan American Petroleum Corporation, Destrehan, Louisiana; A. E. Higgs, The Texas Company, San Antonio, Texas; Chas. J. Holland, president and general manager, Rado Refining Company, McAllen, Texas; D. H. Hyler, superintendent, Continental Oil Company, Wichita Falls, Texas; E. A. Johnson, superintendent, Stone Oil Company, Texas City, Texas; J. B. Joyce, manager of operations, American Petroleum Company, Houston, Texas; Ed Kimes, superintendent, Root Petroleum Company, El Dorado, Arkansas; Lee Le Ferney, plant manager, Southport Petroleum Company, Texas City, Texas; J. K. MacKinnon, general manager, Talco Asphalt & Refining Company, Mount Pleasant, Texas; John May, Shell Petroleum Corporation, Houston, Texas; W. Mullemeister, refinery manager, Shell Petroleum Corporation, Houston, Texas; H. D. McLean, Rodessa Oil & Refining Corporation, Shreveport, Louisiana; J. A. O'Neill, Hurricane Petroleum Corporation, Overton, Texas; Ralph P. Pierce, manager, Arkansas Fuel Oil Company, Shreveport, Louisiana; W. H. Powell, superintendent, Bright Stock Company, El Dorado, Arkansas; L. L. Rebber, superintendent, McMillan Petroleum Corporation, Norphlet, Arkansas; John Ricker, Magnolia Petroleum Company, Fort Worth, Texas; C. E. Robertson, general superintendent, Republic Oil Refining Company, Texas City, Texas; M. R. Ryan, superintendent, Dancinger Oil & Refineries, Inc., Longview, Texas; R. G. Sanders, Magnolia Petroleum Company, Beaumont, Texas; P. C. Scullin, assistant manager, Refining Department, The Texas Company, Houston, Texas; J. C. Senter, general superintendent and chief engineer, Chalmette Petroleum Corporation, New Orleans, Louisiana; J. L. Sewell, superintendent, Coastal Refineries, Inc. Port Isabel, Texas; K. W. Shimeall, refinery manager, Crown Central Petroleum Corporation, Houston, Texas; H. F. Sims, general superintendent, Panhandle Refining Company, Wichita Falls, Texas; John Sue, Gasoline Department, Humble Oil and Refining Company, Houston, Texas; T. J. Sullivan, general superintendent, Gulf Oil Corporation, Port Arthur, Texas; P. J. Sweeny, superintendent, Pan American Refining Corporation, Texas City, Texas; J. J. Thomas, general superintendent, East Texas Refining Company, Longview, Texas; Roger Traiweek, general superintendent, Eastern States Petroleum Company, Houston, Texas; A. T. Van Pelt, general superintendent refinery, Berry Asphalt Company, Waterloo, Arkansas; R. L. Verner, superintendent, Pure Oil Company, Smiths Bluff, Nederland, Texas; F. L. Wallace, general superintendent, The Texas Company, Port Arthur, Texas; O. W. White, superintendent, Stanolind Oil and Gas Company, Vivian, Louisiana; J. F. Whitehurst, superintendent, Corpus Christi Refining Company, Corpus Christi, Texas; and Fred N. Williams, Martin Refining Company, Gladewater, Texas.

Transportation Committee: T. G. Price, Shell Petroleum Corporation, Houston, chairman; Leo New, United Gas System, Houston, vice chairman; Oscar Lynch, Humble Oil and Refining Company; E. B. Tilley, Gulf Oil Corporation; Jack Parker, Transportation Equipment Company; Tom Bradfield, The Texas Company; Roy Fike, Mid-Continent Oil Company; J. E. Johnson, Tide Water Associated Oil Company; Alex Muncie, Pure Oil Company; Lonnie Smith, Sun Oil Company; Dan Moran, Continental Oil Company; S. C. Bovell, Magnolia Petroleum Company; and Sam Phillips, Sinclair-Prairie Oil Company.

Independent Petroleum Association Program

THE attention of the domestic petroleum industry is focused on Houston October 14, 15, and 16, the dates of the eighth annual meeting of the Independent Petroleum Association of America. These dates are included in the week of the Oil-World Exposition scheduled for Houston, October 11-16.

George A. Hill, Jr., chairman of the Committee on Arrangements, has announced the acceptance of Harold L. Ickes, secretary of the interior, as the principal speaker at the annual banquet on Friday evening, October 15. This banquet will be held in the auditorium, which will seat 2000. The banquet will be in charge of the Wildcatters, famous throughout the oil industry as premier entertainers on occasions of this kind. Serving with George A. Hill as the general Committee on Arrangements at Houston are: E. A. Showers, Jim Carroll, Ralph Johnston, C. E. Buchner, Haygood Ashburn, H. R. Cullen, Frank Carothers, George Strake, W. S. Noble, George Sawtelle, T. J. Donoghue, and Winston P. Henry.

Chas. F. Roeser, president of the Independent Petroleum Association of America, and the executive officers of the association have planned a working convention. Committee reports of the standing and convention committees that have been at work for many weeks will report at this convention. Outstanding among these are the Committee on Unnecessary and Excessive Drilling, under the leadership of C. P. McGaha, oil producer of Wichita Falls, Texas; the Tax Policy Committee, under the leadership of E. H. Moore of Tulsa, Oklahoma; Committee on Public Relations, under the leadership of Burdette Blue of Bartlesville, Oklahoma; and the Asphalt Committee, under the leadership of Paul Blazer of the Ashland Refining Company of Ashland, Kentucky. In addition to these the following committees will convene on Wednesday, October 13, at the Rice Hotel, one day previous to the sessions of the convention, to prepare their final reports for the convention:

Committee on Balance of Supply With Demand, H. B. Fell, chairman.

Royalty Owners Committee, Robert H. Wood, chairman.

Activities Committee, C. A. Lester, chairman.

Budget and Finance Committee, N. T. Gilbert, chairman.

Committee on Constitution and By-Laws, Marvin Lee, chairman.

Committee on Credentials, Rules, and Order of Business, Bryan W. Payne, chairman.

Membership Committee, Ralph T. Zook, chairman.

Nominating Committee, E. L. Smith, chairman.

Resolutions Committee, Wirt Franklin, chairman.

The entertainment features of the convention are being provided by the Houston Committee on Arrangements. In addition to the annual banquet, in charge of the Wildcatters of Houston, plans are being made for special events for the ladies who may attend the sessions—yacht trips in the Harbor, garden parties, and on Saturday afternoon, immediately following the ad-

journment of the convention, one of the outstanding football classics of the Southwest will be played at the Rice Stadium between Rice Institute and the University of Tulsa. W. S. Noble, Jr., Houston, has reserved 500 seats in a special section for delegates who desire to attend the game.

C. E. Buchner, executive manager of the association, at Tulsa reports that registrations already have been received from all of the oil producing states and that the advance registration indicates the largest attendance of any meeting in the history of the association.

The domestic petroleum industry has been exceedingly fortunate during the past session of Congress in having been granted several measures for the stabilization of the industry. The Independent Petroleum Association of America has had a large part in unifying the efforts of the industry in obtaining this favorable legislation. The excise taxes on imported crude oil and refined products, obtained first through the efforts of the association in 1932, renewed again in 1934 and 1935, expired on June 30, 1937, were renewed during the past session of Congress, and were extended for two years to September 1, 1939.

The Connally Hot Oil Law, which prevents the shipment of illegally produced oil in interstate commerce, expired on June 16, 1937. Congress extended this law for two years and appropriated funds for the enforcement of its provisions.

The Interstate Oil Compact expired June 30, 1937. Congress renewed and extended this Compact to September 1, 1939.

Permits to drill on public lands would have expired with disastrous results to operators in public land states if the Greever-Dempsey-O'Mahoney Bill had not been passed with provision extending these permits.

Anti-pollution bills with ruinous provisions for oil operators were introduced and urged for passage.

The Vinson Waste Disposal Measure, which provides for coöperation between the states and the federal government in working out a solution, was passed in the House and amended in the Senate. Conferees failed to agree, so the bill did not pass.

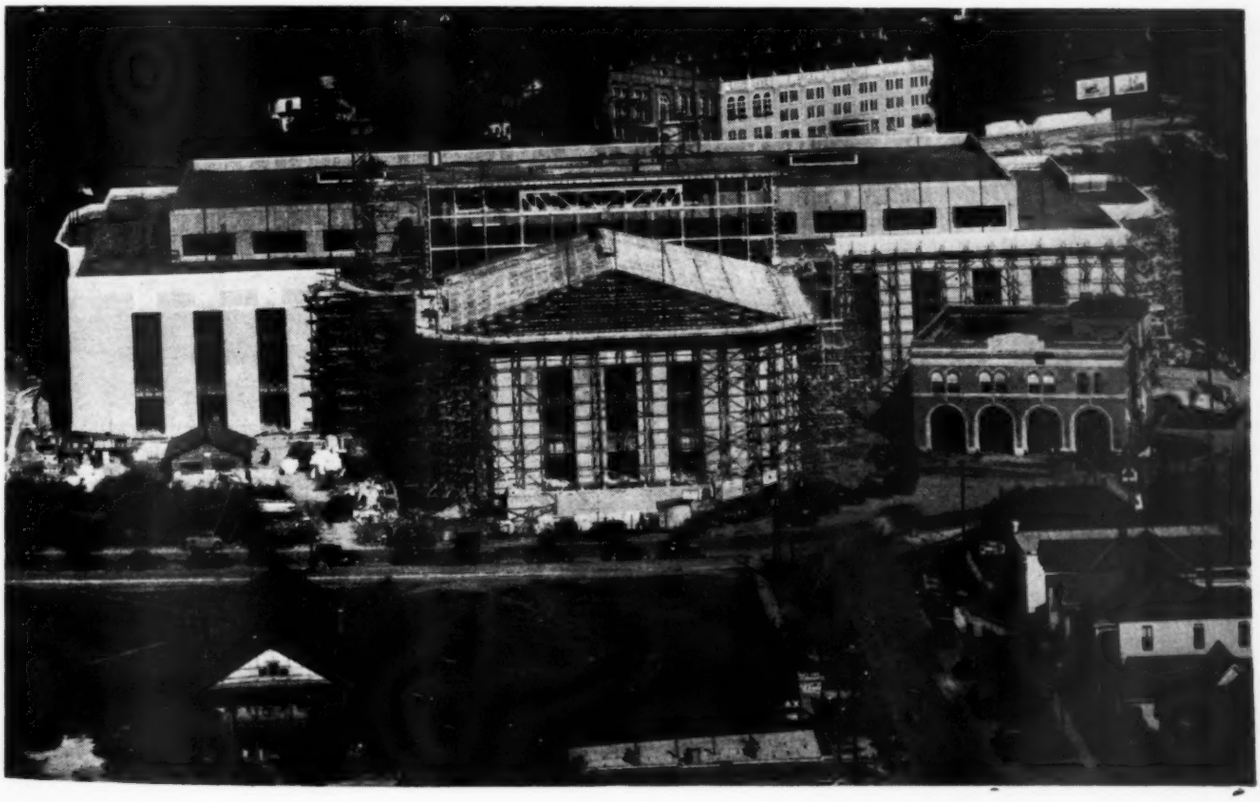
Bureau of Mines appropriation for work in forecasting state demand was stricken from the bill in committee. The full amount of the appropriation was placed back in the bill and passed by Congress.

During the past session the secretary of the treasury recommended to Congress through the president's message that the 27½ percent depletion allowance on oil and mining income be eliminated as "tax evasion", and that certain royalty companies be classed as holding companies and taxed out of business. This depletion was granted to the industry as a right by Congress.

During the coming session of the eighth annual meeting of the Independent Petroleum Association of America at Houston this matter will be fully discussed by the delegates. A determined effort will be made by the petroleum industry to accumulate and correlate the necessary information to present properly the case before the committees in Congress during the next session, whether it be a special session or the regular session that convenes in January. The Independent Petroleum Association of America now has a membership in all the oil producing states and is the only national association representing independents in all the oil producing states.

The Chamber of Commerce at Houston and the Hotel Men's Association at Houston have combined their efforts to accommodate all who desire to attend the meeting of the Independent Petroleum Association of America and the Oil-World Exposition during the week of October 11 to 16. Those who are planning to attend should immediately wire their favorite hotels at Houston for accommodations in order to insure the type of accommodations desired.

New Jesse H. Jones Coliseum, where Oil-World Exposition will be held



South Houston Field
Houston, Texas
Houston Ship Channel, Turning
Basin, Houston, Texas
Petroleum Building
Houston, Texas
Barbers Hill Field
Texas Gulf Coast
Gulf Building
Houston, Texas
Shell Refinery
Houston, Texas

Shell Building
Houston, Texas
Spindletop Field
Texas Gulf Coast
Jennings Field
Louisiana Gulf Coast
Esperson Building
Houston, Texas
Sinclair Refinery
Houston, Texas

Many Educational Features

WITH exhibit space entirely contracted for and the Jesse H. Jones Coliseum, the new $1,337,000 structure that will house the show, nearing completion, the Oil-World Exposition, to be held in Houston, Texas, October 11 to 16, promises to be one of the outstanding exhibitions of its kind. Hundreds of manufacturers have reserved space for the displaying of their products, and in addition numerous group meetings of an instructive nature have been prepared (the programs of which will be found elsewhere in this section), and the social side of the affair has not been overlooked.

The purpose of the Exposition is well summed up in a paragraph taken from the by-laws of the Oil-World Exposition, Inc., as follows: "The purpose and limits of the activities of this association are, in a broad sense, educational, and shall comprise the collection, study, and dissemination of factual data with respect to the oil industry in the following particulars: The collection and dissemination of knowledge in relation to the presence and discovery of oil, gas, and other minerals; the production, storage, transportation, refining, and marketing of petroleum and its products; and the display and exhibition of the mechanical equipment employed in the aid thereof."

Jesse H. Jones Coliseum

The new Jesse H. Jones Coliseum is progressing in accordance with the construction schedule and will be available for use in time for exhibits to be installed prior to the opening of the Show. Despite the extensive space made available by this new $1,337,000 building, a great number of the equipment exhibits will have to be displayed in a large tent that will accommodate 200 additional booths.

This tent, however, will be completely waterproof and will have a wooden floor, electric outlets, booth partitions, signs, water, gas, and all other facilities provided in the main building. Moreover, the main entrance to the Oil Show will be through this tent and all access to the Coliseum, meetings and convention rooms, demonstration spaces, and outdoor exhibits will be via this tent.

Five vacant city blocks adjacent to the building have been leased by the Exposition management to provide an enlarged space for exhibits of big and heavy machinery and for demonstration of various types of equipment. This land is in addition to the outdoor exhibiting space originally planned and will give exhibitors parking facilities that otherwise could not be made available.

Foreign Oil Men to be Present

The international aspect of the Exposition is evident from the number of representatives of foreign oil companies that has made inquiries regarding accommodations. With the increase in drilling, production, and refining activities throughout the world there is evident a considerable interest in American tools and machinery, especially of the newer designs that will bring increased efficiency to field and plant operations.

Among those who have made definite reservations for their stay during the Oil Show are: J. W. Bradbury, general agent, Mexican Gulf Oil Company, Mexico; J. E. Burden, president, Sheldon Burden of Mexico, Mexico; F. G. Burslem, driller, Apex Oilfields, Ltd., Trinidad; I. A. Eremin, director, Mashinoimport Department, Amtorg Trading Corporation, U. S. S. R.; Raphael Fussteig, consulting engineer, Wilstein-Neudorfer Concern, Poland; M. M. Hess, president, Hughton Coöperation Oil Company, Canada; Karl Kahn, engineer, "Unirea" Soc. Anon. Rom. de Petrol, Roumania; C. M. Long, managing director, Blood Indian Oils, Ltd., Canada; L. McKillop, drilling superintendent, Oil Search, Ltd., Australia; John Machado, A. R. Tillotson S. en C., Mexico; Werner Muller, Alfred Wirth & Company, Germany; A. Norcott, field manager, International Petroleum Company, South America; Inz. T. Porembalski, superintendent, Standard Nobel w Polsce, S. A., Poland; Sr. Francisco Rappalini, administrador, Argentine Government Oil Fields; A. R. Tillotson, A. R. Tillotson S. en C., Mexico; Robert Wesselhoeft, manager for Colombia and Venezuela, Texas Petroleum Company, Colombia; R. B. Kester, care of Standard Oil Company of Venezuela, Quiriquire, Venezuela.

Many other foreign oil operators are being provided for by local company personnel and by some of the exhibiting companies.

Humble Building, Houston, Texas

Provided For Show

Entertainment Features

In addition to the daily entertainment provided for visitors, evening programs are being completed to offer special events of interest. During the week, the United States Army Band will give concerts; and at night, aviation searchlights will be operated outside the Coliseum by a group of soldiers and officers of the 69th U. S. Coast Artillery of Fort Crockett, Texas.

One of the outstanding entertainment features will be a special golf tournament scheduled for Wednesday, October 13, at the Brae-Burn Country Club. It is anticipated that this will be one of the largest golf tournaments ever held by the oil industry and all entries will be confined to men actually connected with the industry. This includes oil company personnel, manufacturers, supply men, and drilling contractors. A number of firms have arranged to present worth-while prizes, and the Exposition is giving a first prize, consisting of a large cup that will be a revolving trophy.

On Thursday night, October 14, there will be an all-star, Oil Show wrestling match at the Houston City Auditorium. The Exposition management has purchased 1000 tickets for this affair, which will be resold to visitors and exhibitors at cost, and has reserved 500 additional seats in order to make sure that every one interested may be able to see the match.

A football game between Rice Institute and Tulsa University will be held on Saturday, October 16. This should be very interesting to the oil men from the cities of Houston and Tulsa and a large number of tickets is being provided for numerous guests from out of town.

Communication System Arranged

A public address system, pages, and telephones will be used to provide complete communication during the Exposition. Through these different means of communication, the usual confusion often attending the concentration in one system will be eliminated and individual attention will be given exhibitors in regard to messages to and from booths.

The Gulf Oil Company will provide the public address system that was used over the entire grounds of the Texas Centennial Exposition last year. It will cover all parts of the exposition building, the tent and the outdoor grounds. The company will provide technicians and operators and this system will be used for the convenience of the exhibitors and exposition management for making special public announcements and informing visitors of the various meetings.

Paging will be done by special messengers and the public address system thus will be relieved of this burden. Calls that any exhibitor may have will be relayed instantly to his booth with a written message.

Telephones will be installed throughout the buildings and grounds for use of the various floor managers, general superintendents, and general managers. These telephones will be connected with a signal system so that the exposition office will be in constant touch with all parts of the entire exposition plant.

No Increase in Hotel Rates

All hotels in Houston have agreed to maintain standard prices charged throughout the year during the exposition.

The Houston Chamber of Commerce has appointed a Housing Committee, which has listed all the smaller hotels with their rates, facilities, and standing. This committee also has listed several hundred rooms in private residences where visitors also may obtain accommodations.

Single rooms in Houston hotels may be obtained from $2:50 per day up; double room from $4.00 per day up. Reservations can be made through the Oil-World Exposition, Inc., Petroleum Building, Houston, Texas.

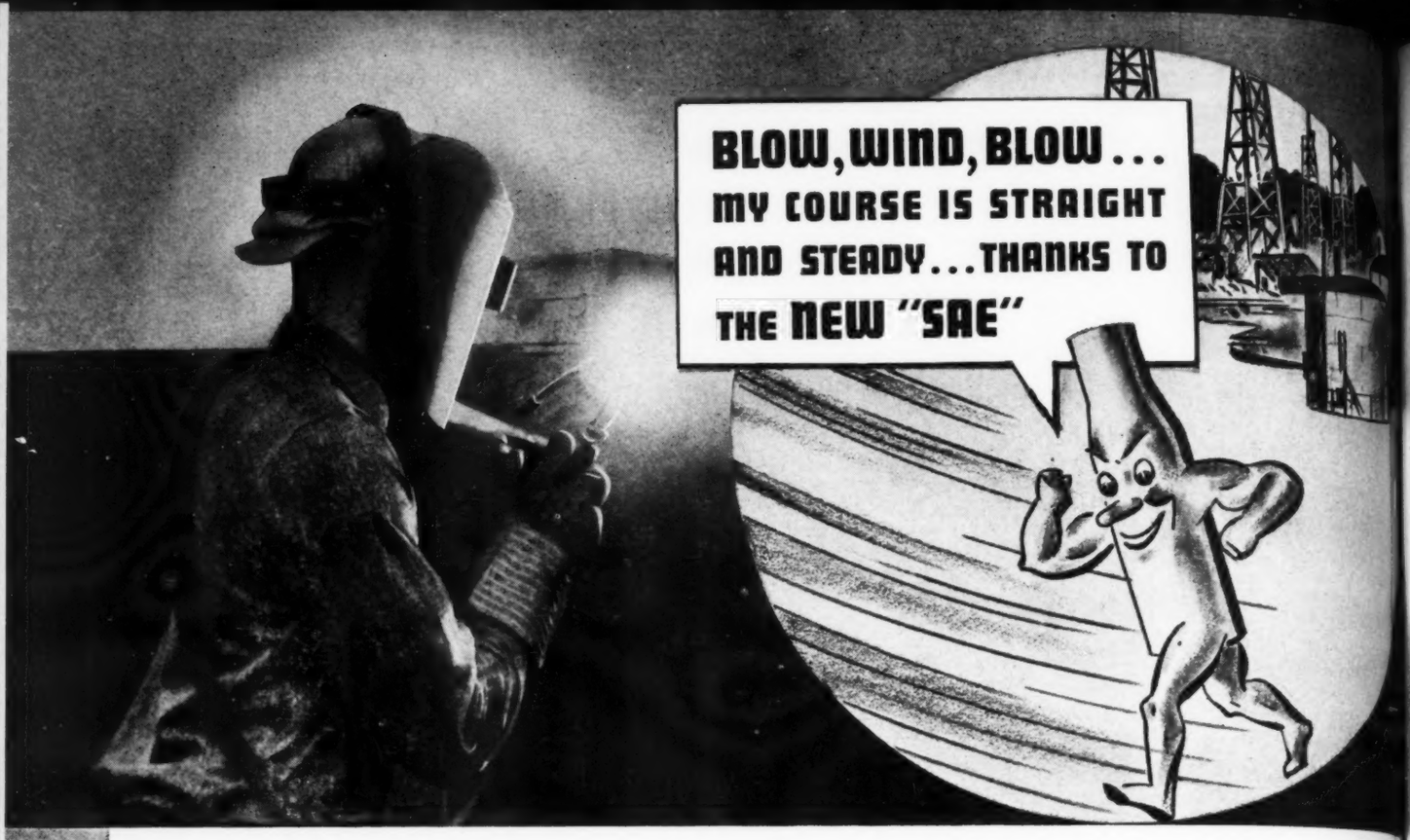
Advance Sale of Admission Tickets Good

A splendid response has been received by the management of the Oil-World Exposition for admission tickets. Although the tickets were offered for sale only recently, 17,920 have been sold to the various concerns and additional orders are being sent out daily.

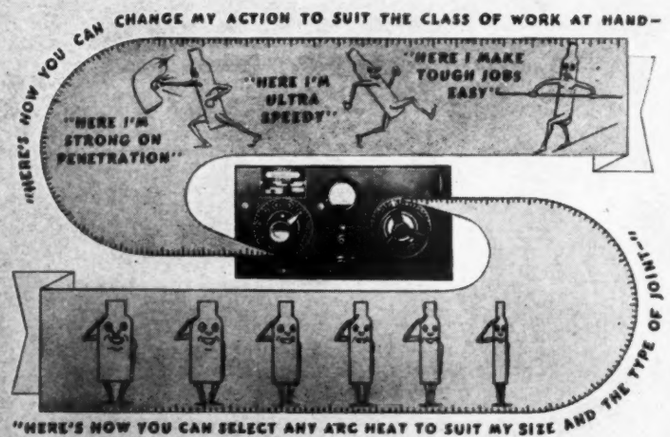
The Norvell-Wilder Supply Company purchased the first 1000 tickets and ticket No. 1 was presented to John R. Suman, vice-president, Humble Oil and Refining Company, and president of the oil show.

A total of 100,000 tickets have been printed for the expected attendance. This figure is in addition to the 2000 persons who will have charge of the various exhibits for individual firms.

The Texas Company Building, Houston, Texas



"I FIND WELDING 5 TO 10 FEET PER HOUR FASTER WITH THE NEW 'SHIELD-ARC SAE'


"HERE'S HOW YOU CAN CHANGE MY ACTION TO SUIT THE CLASS OF WORK AT HAND—
"HERE I'M STRONG ON PENETRATION"
"HERE I'M ULTRA SPEEDY"
"HERE I MAKE TOUGH JOBS EASY"
"—AND THE TYPE OF JOINT"
"HERE'S HOW YOU CAN SELECT ANY ARC HEAT TO SUIT MY SIZE

"During my life, I've worked in some husky gale- out on the firing line, on the derricks and up on the tall tanks. Never have I turned out so many dense in of weld per hour under windy conditions as I do wi the new Lincoln Welder. Here's why—

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"As a result, I give you 15% to 20% faster weldi which, on the average job, means as much as a 10-ho per-hour bonus. Ask for proof.

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"FLEETWELD ROD"

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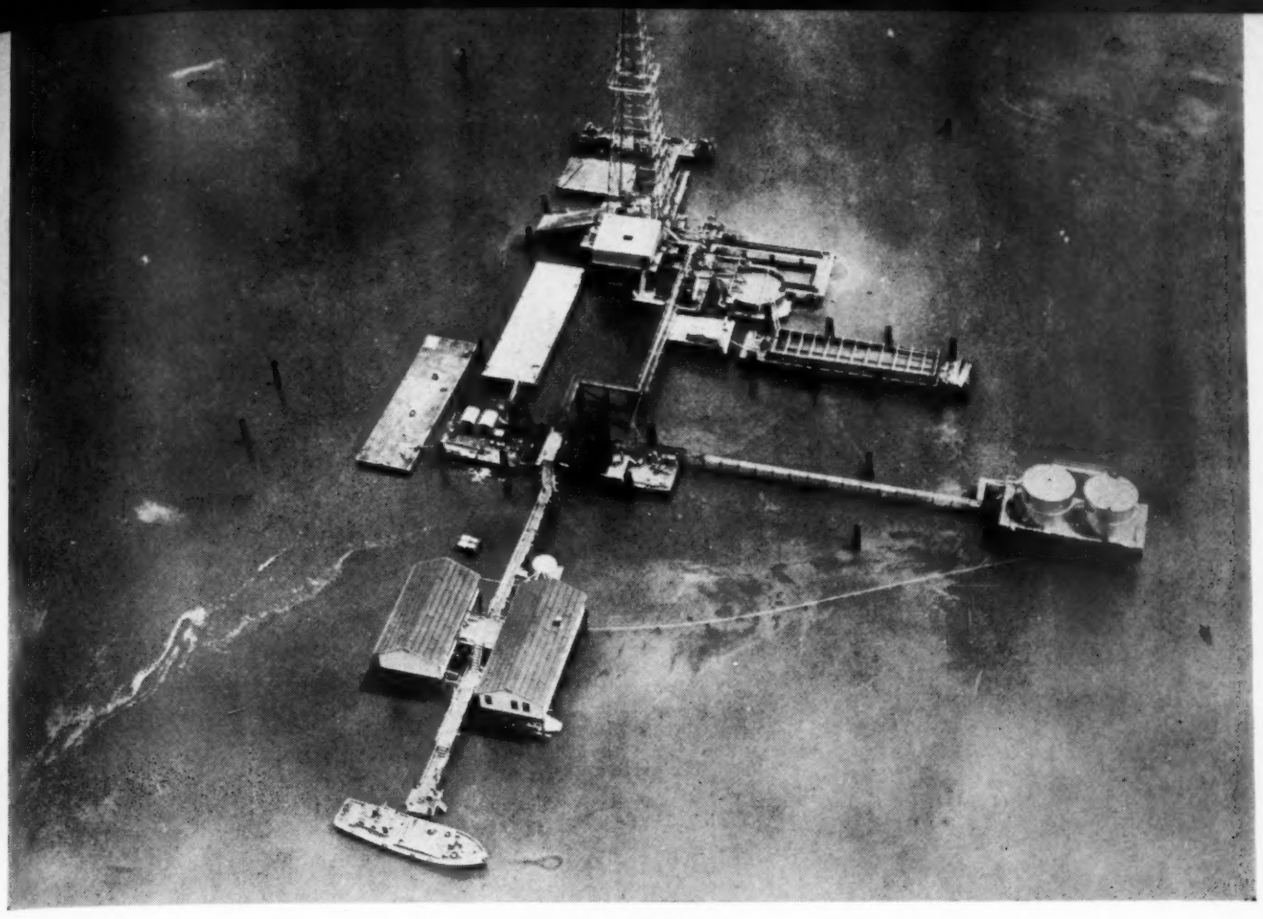
LINCOLN "SHIELD-A SAE"

THE WELDER WITH DUAL *CONTINUOUS* CONT



Aerial view of the rig

A Modern Steam Rig That Approaches Power Plant Efficiency

High efficiency being sought in steam generation and utilization is expected to lead to great economies in drilling operations on water locations

By M. L. CASHION, Assistant Superintendent, Gulf Oil Corporation, Texas Division

IN shallow Timberlier Bay, La-Fourche Parish, Louisiana, one of the most efficient and economical steam drilling rigs yet designed is in operation on the Gulf Oil Company's well South Timberlier Bay No. 3 on the Louisiana State P. P. Lease. Within a few hundred yards of the Gulf of Mexico and in the lee of narrow Bird Island, this rig is drilling ahead below 7100 ft. on what may be a 10000- or 12000-ft. test. It embodies every modern improvement and every steam-, fuel-, and water-saving device designed for drilling rigs, and approaches power plant efficiency in operation. Two changes would further economize operations: The mechanical atomization of the fuel and the use of a higher vacuum on the condenser.

Preparatory to rigging-up on June 2, 1937, the company spent a considerable amount of both time and money. First, due to the shallow water of the bay, it was necessary to dredge a channel to the well site. Then piles were sunk 60 ft. deep and the entire layout, with the exception of the boilers, was mounted on this storm-proof piling foundation.

The two 125-hp., 350-lb. boilers and the separately-fired superheater are mounted on a floating barge lashed to eight 5-tie pilings and moored to

Another view of the rig taken from the air

General view of the layout

two other 5-tie pilings. The 159-ft. steam line connecting the boilers and the rig is fitted with ball joints that allow the boiler barge complete freedom of movement with the rising and falling of the tide or waves without injury to the steam line. Two of the rig's numerous efficient features are found on the boiler barge. The superheater is fitted with automatic temperature control and the boilers with automatic pressure control.

The piling on which the derrick is mounted and the standard A. P. I. substructure place the floor of the 136-ft. steel derrick 17 ft. 4 in. above the mean low tide level. A 12-in. by 12-in. vertical twin-cylinder steam engine drives a four-speed, heavy-type drawworks fitted with a 40-in. hydromatic brake. All sprockets are machine-cut and heat-treated. The chain is completely enclosed and is flood-lubricated. The 27½-in. oilbath rotary is not driven through the drawworks but by a separate 7-in. by 7-in. vertical twin steam engine.

Another feature is the separately-driven slush pump. Besides one 14-in. by 7¼-in. by 18-in. direct-acting steam pump, there is a 7¼-in. by 18-in. slush pump driven by a 7-in. by 7-in. vertical twin engine through a V-belt drive. Other important pieces of equipment on the rig are:

One 300-ton, 42-in., 6-sheave crown block.

One 300-ton, 42-in., 5-sheave traveling block.

One 300-ton hook.

One 300-ton swivel.

Two 10-in. by 4½-in. by 10-in. boiler feed pumps.

One 10-in. by 6-in. by 5-in. by 12-in. feedwater heater pump.

One 13⅜-in. ram-type flanged blow-out preventer.

One 13⅜-in. inserter-type blow-out preventer.

One 13⅜-in. ram-type master valve.

The last three items listed are all pressure-operated and are mounted on the flanged bradenhead.

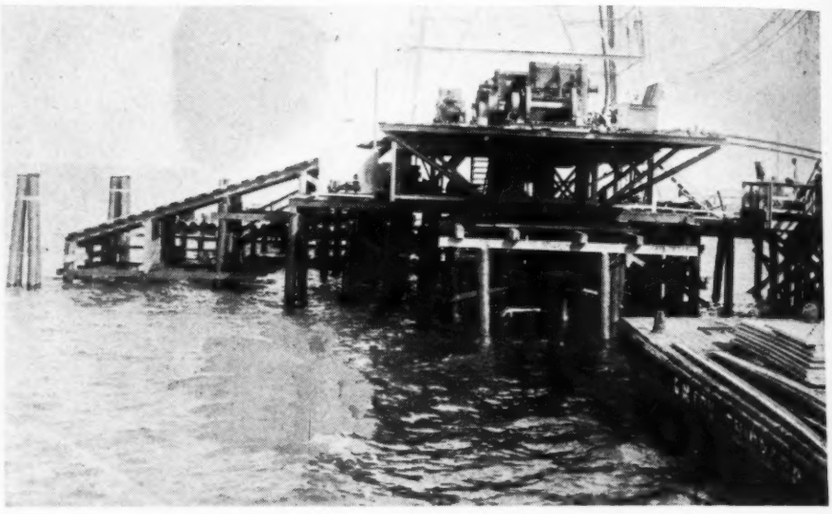
Two 7-in. flow lines equipped with chokes deliver the mud to a vibrating screen, whence it is routed by a steel ditch to a cypress mud tank 6 ft. deep and 30 ft. in diameter. A floating barge serves as a reserve pit.

The boilers are mounted on a well-designed and well-constructed "duck nest" and are fired under the barrel. Using oil for fuel, this firing arrangement vaporizes and burns the oil before it reaches the boiler flue sheet, and only the hot gases reach the boiler, so there is little or no chance of a soot deposit forming on the heating surface of the boiler. Such a deposit, acting as an insulator, would reduce the rate of heat transmission to the boiler and thus necessitate a hotter fire and therefore more fuel to maintain the same rate of evaporation. As it is, the rig uses only about 47 bbl. of fuel oil daily. As the fuel has to be transported 15 miles to the rig, the small amount of fuel oil consumed is an economical factor.

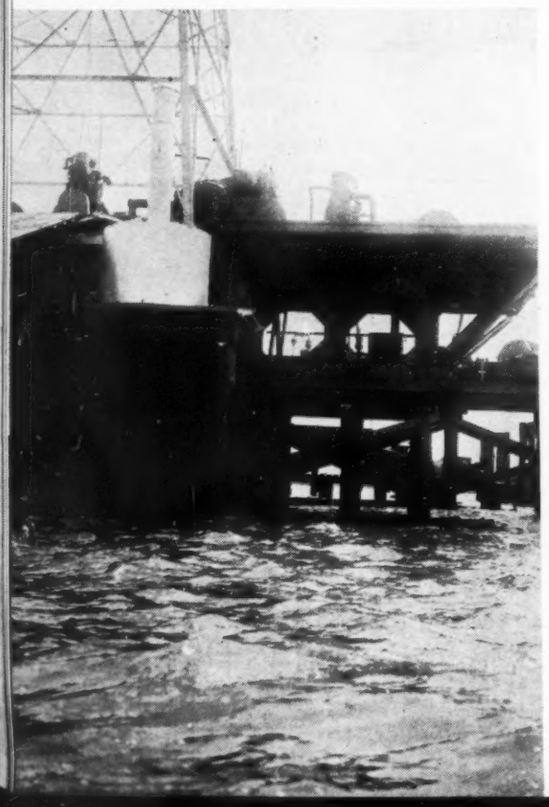
The latest type metal jackets insulate the boilers. All steam lines are well insulated and all the units discharge their steam into a surface condenser, the condensate from which is delivered to a floating barge that is used as a boiler feed pit, or hot-well. A turbo-driven centrifugal pump picks up bay water and circulates it through the condenser. All water for boiler and camp use is barged in for a distance of 30 miles.

From the floating barge, which serves as a boiler feed pit, water is picked up and treated in a large 90-bbl. tank heater and treater. The water then is heated further in the 10-in. by 6-in. by 12-in. feedwater heater unit. Except for this boiler barge, the layout of the rig conforms to the Gulf Oil Company's standards for land rigs.

The use of the condenser, which returns heated and clean water to the boilers, the separately-fired superheater, the feedwater heater unit, the



The rig during construction



Showing type of foundation. Photo taken during construction

cut-off control on all engines, the insulating of all steam lines, the use of separate engines for the rotary and the slush pump, all play an important part in reducing the amount of fuel and water consumed on the rig. Approximately 47 bbl. of fuel oil at the boilers and approximately 300 bbl. of water are consumed daily for all rig and camp purposes. Of the 300 bbl. of water, the rig consumes about 200 and the camp requirements the remainder.

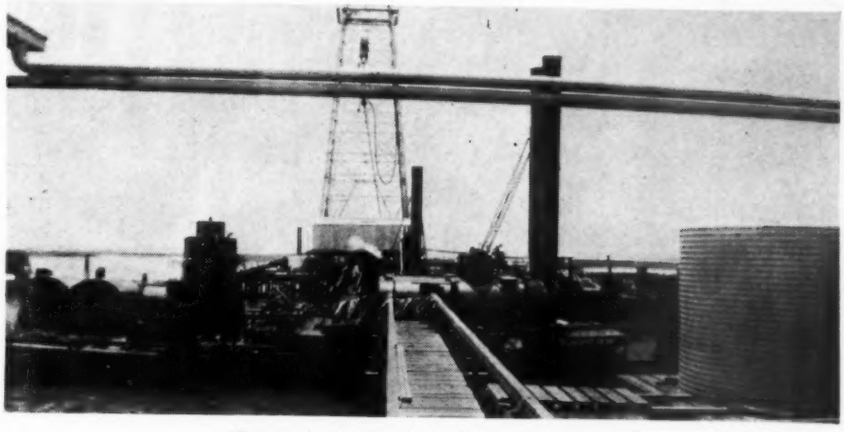
In the photograph, Fig. 1, may be seen at the extreme right the two tanks that hold the water for camp use. In the event of the well being a producer, these two tanks will be used as production tanks. The two houses in the lower part of the photograph are the bunk houses for the crew of 20 men that live at the camp, which is fitted with all modern conveniences. The crew works nine days and then is replaced by a new crew. Each crew has six days off at the end of each nine days. The men are conveyed to and from the camp in fast speed boats.

Fig. 2 is another aerial view of the rig. The strip of land at the upper left in the photograph is Bird Island. The water beyond it is the Gulf of Mexico. Waves break almost constantly over this narrow strip of sand.

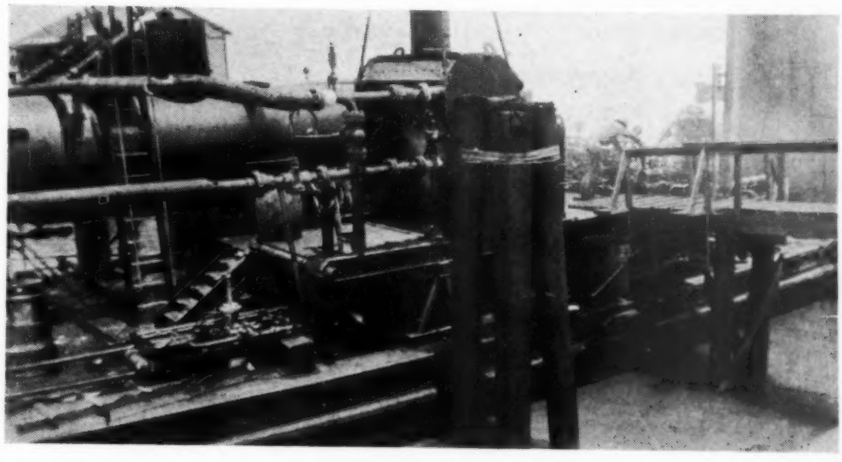
In working this state lease, the Gulf Oil Company has taken every possible precaution to prevent pollution of the waters of Timberlier Bay. Under the wooden derrick floor, a steel mud floor catches mud, oil, or other pollution and drains to the steel mud ditch. Special water-tight boxes are used to catch all oil on drill-stem tests. Each fourble is plugged as it is pulled up and, as the fourble is broken out, it is drained into the water-tight boxes. All the boilers are provided with efficient drip pans that catch any oil from the burners or the furnaces. The tank decks are drained in a like manner.

In summation, it may be said that mainly responsible for the economical figure at which this rig can be operated, even under such adverse conditions as are confronted at the present site where oil and water have to be barged in, are the six economical features: (1), automatic control; (2), dutch ovens under boilers and superheater; (3), fully insulated boilers and steam lines; (4), superheated steam; (5), reciprocating engines operated with cut-off control; (6), condenser, which reduces the back pressure on the engines and returns heat and clean water to the boilers.

Barge used as a reserve pit

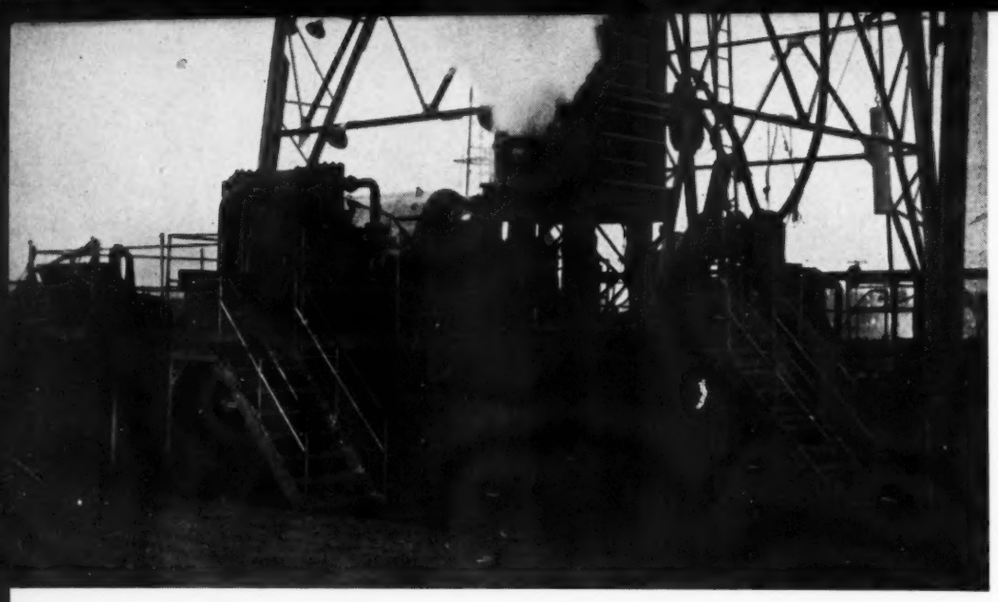


General view looking from the camp



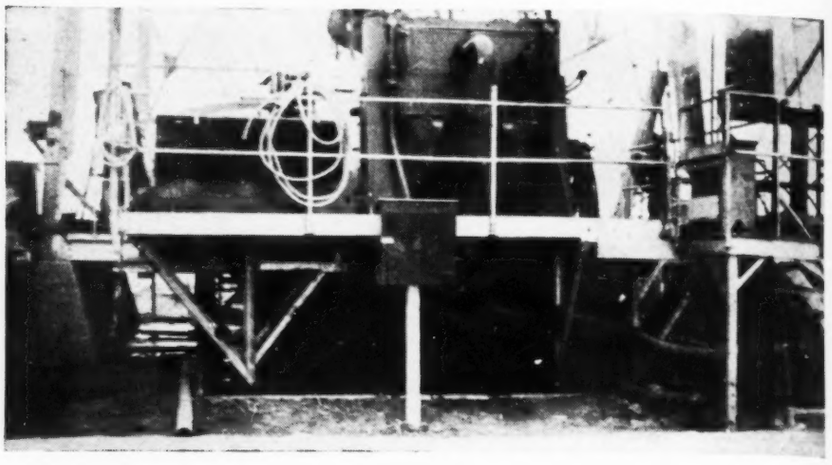
The boiler barge

View of derrick floor showing rotary table



Left—General view of Royalty Service Corp. well No. 2 El Segundo

Below—This vertical steam engine drives the main drawworks only



Advanced ideas on the assembly and arrangement of balanced equipment at the well are reflected in the results obtained

Unitized Rotary Rig of Improved Design For Deep Drilling

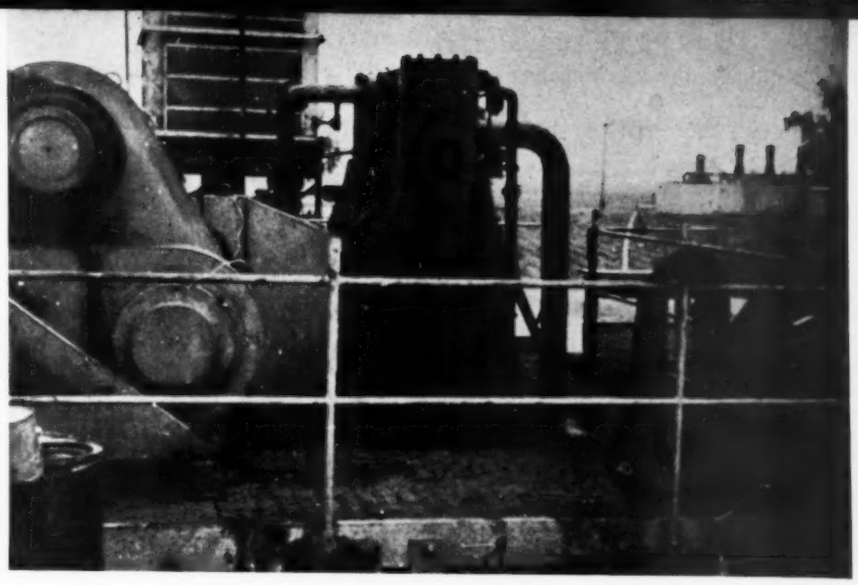
By WALLACE A. SAWDON
Petroleum Engineer, Los Angeles

A HIGH degree of portability, combined with ease and speed in rigging-up, has been procured in a unitized rotary drilling base assembly designed by the Royalty Service Corporation, Ltd., of Los Angeles, California. The first application of this assembly is on Royalty Service well No. 2 in the El Segundo field in California. Of outstanding importance has been the balanced equipment used and the results achieved in economic operation. Not only was rigging-up time cut down materially but actual drilling of the well has progressed with greater speed than at any other location in this field to date.

The general arrangement of the surface equipment is shown in Fig. 1 and the side elevation showing the four units of which the drilling base assembly is composed are indicated in Fig. 2. Even the walks and steps are made of steel and are portable. Before moving the units in, of course, the concrete cellar and mats are constructed. Considerable foundation work is saved in the design, however, by the derrick floor being only 5 ft. 4 in. above the concrete mat. All units except the rotary table support are tied to the mats by rods extending from anchors set in the concrete to the lower flange of the upper cross member of the steel base.

Each unit of the drilling base assembly consists of the structural steel base and the equipment that the base supports. Built into the sub-base and forming a permanent part of the unit are all steam piping and connections to the equipment that it serves. A steam scrubber for the vertical steam engine powering the drawworks also is built into the sub-base of that unit.

Steam lines slope with the direction of flow of the steam and there are three major drip areas on the line of steam flow. One trap is attached to the scrubber previously mentioned; another trap is on the line into the small vertical engine driving the rotary table and standby drawworks; a third trap is situated on the line just before it

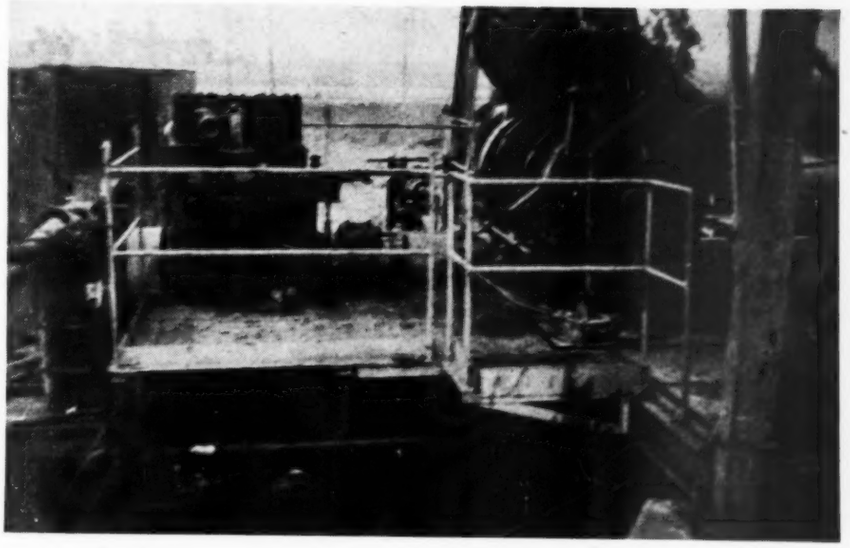


Another view of the vertical steam engine

enters the mud pumps. Steam to the rig is carried through a 4-in. line from the boiler plant, which is situated 350 ft. away.

The derrick used is an Ideco, 136 ft. high with a 26-ft. base, and the structural steel sub-bases were fabricated by the International Derrick and Equipment Company at Torrance, California. The crown block is a Regan 5-sheave type and the traveling block an Oilwell No. 66. The hook is a B-J 300 Triplex, the swivel an Ideal Type E, and the Kelly 5-in. Ideal, 54 ft. in length.

The prime mover for the main drawworks is an Oilwell 12 by 12 vertical twin engine the steam for which first passes through a master scrubber. This engine and its sub-base constitute one unit; in rigging-up it is connected to the drawworks unit by



The rotary table is driven by the small vertical steam engine seen on the left. To the right can be seen a portion of the standby hoist

two structural steel members bolted to the upper members of the two units. The engine unit is adjustable, tension on the chain from the engine to the drawworks being taken up or let out by means of a slide rail arrangement. The heavy bolts and jack used to tighten against the rail are shown in Fig. 2. In the exhaust lines from the engine are sections of flexible tubing. This makes it unnecessary to have accurate alignment of connections as any piping that may be out can be swung into position through the flexibility of parts of the line. Such an arrangement facilitates connections to the main exhaust headers.

The main drawworks is an Ideal 34-26 type set on its sub-base to form the second unit in the assembly. In addition to controls for the drawworks and its engine, situated at the driller's position, there also is throttle control of the vertical engine driving the rotary table and the standby hoist. This control is provided by a system of rods and miter gears extending from the engine to the drawworks unit, and complete control of the rotary table operation, as well as that

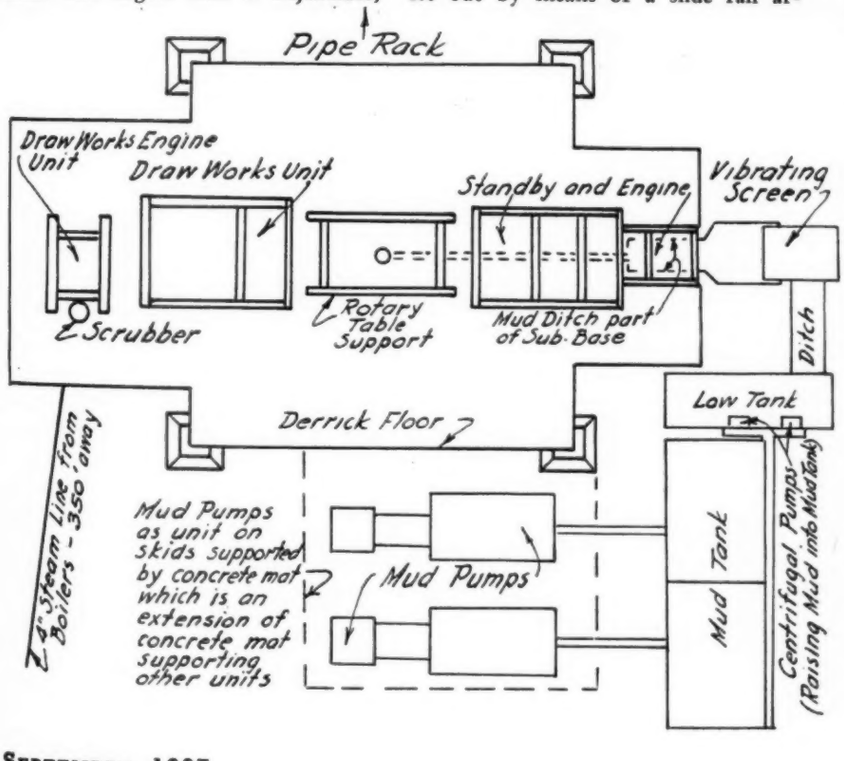
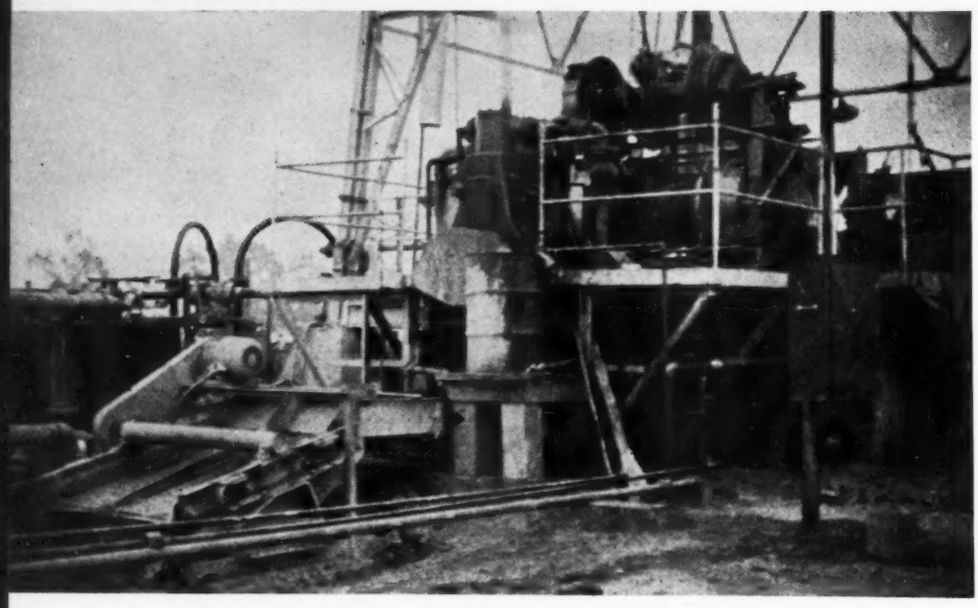

Pipe Rack
Draw Works Engine Unit
Draw Works Unit
Standby and Engine
Vibrating Screen
Scrubber
Rotary Table Support
Mud Ditch part of Sub-Base
Ditch
Low Tank
Derrick Floor
4" Steam Line from Boilers - 350' away
Mud Pumps as unit on skids supported by concrete mat which is an extension of concrete mat supporting other units
Mud Pumps
Mud Tank
Centrifugal Pumps (Raising Mud into Mud Tank)

Fig. 1. General arrangement of equipment used on Royalty Service Corporation well No. 2 El Segundo

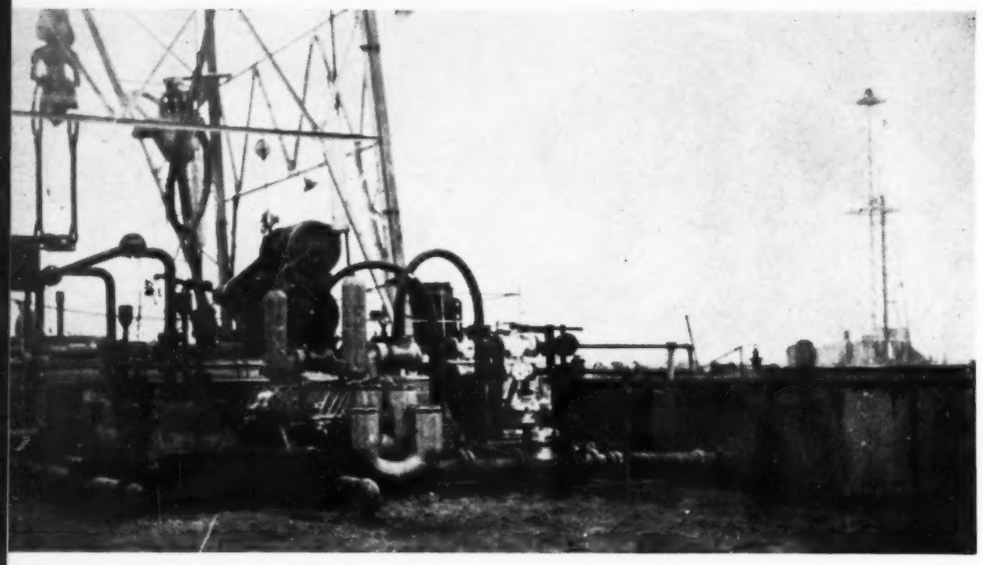


Mud returns flow through a ditch (permanently constructed under standby hoist and small vertical engine) and then through the vibrating screen

of hoisting, thus is possible at the one position.

Drilling control is further enhanced by a Martin-Decker Quintuplex drilling control instrument placed conveniently for observation by the driller. In addition to the indicator gauges watched by the driller, records are kept of weight on the bit, the pump pressure, and the torque. The rotating speed on this well was maintained at 175 r.p.m. by means of the tachometer dial on the Quintuplex; but on future wells a recording tachometer also will be used to provide data that can be compiled with the other records kept during drilling to determine efficiency of operation. Controls for the vibrating screen and the centrifugal pumps used for raising the returns into the mud tank also are on the derrick floor close to the driller.

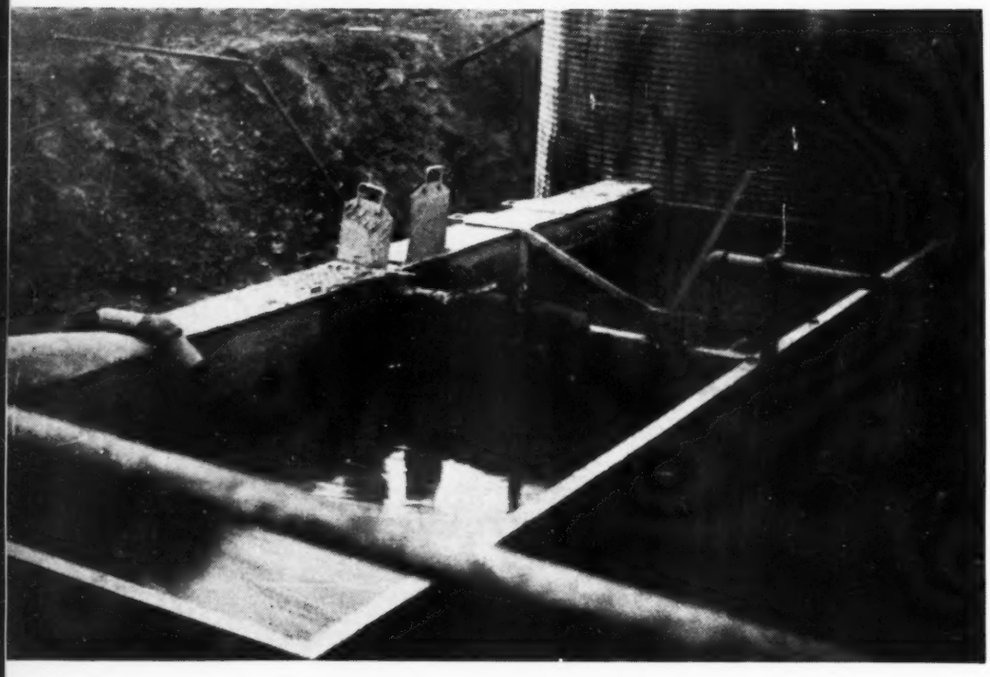
The rotary table is an Oilwell 27½-inch. It is direct-driven by a vertical engine through a shaft extending under



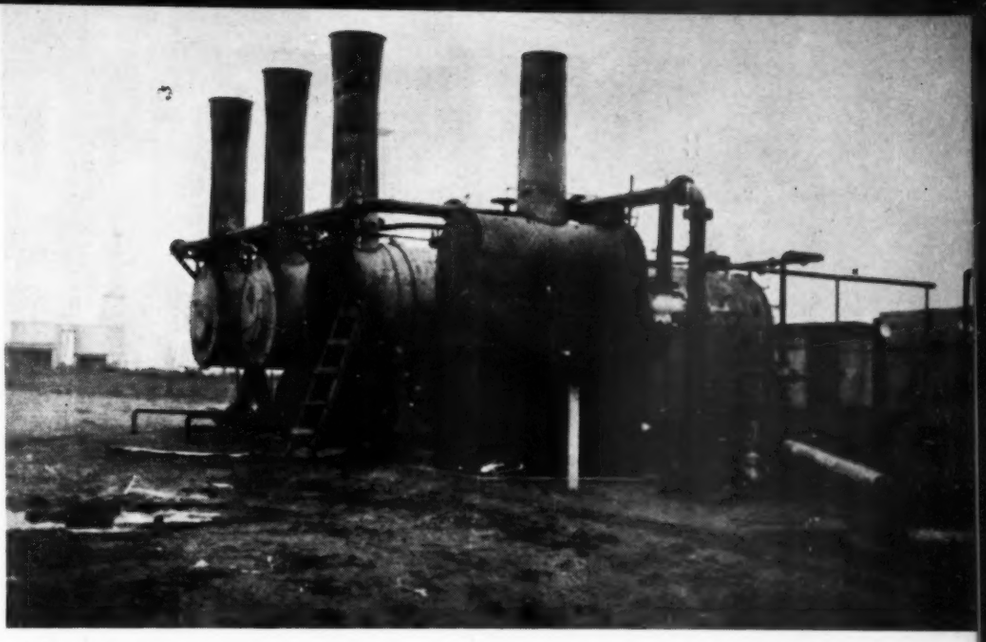
The mud pumps, mounted on skids, rest on a concrete mat. Mud is taken directly from the tank on the right

the standby drawworks. The structural steel support for the table, and the table itself with its shaft connection, make up the third unit, which, in rigging-up, is connected by structural steel members to the drawworks unit on one side and to the unit carrying the small vertical engine and standby hoist on the other. The table support spans the cellar in which are two Shaffer cellar control gate valves. One of these is a master gate valve that provides protection when the pipe is out of the well; the other is equipped with rams that close around the pipe and afford protection while the pipe is in the hole.

The fourth sub-base supports a Hydril Type 2C drawworks with sand reel and an Oilwell 7 by 7¾ vertical twin steam engine. This engine, in addition to driving the rotary table



The mud tank is divided into two compartments



The boiler plant and superheater are situated 350 ft. from the rig

while drilling, powers the standby drawworks immediately in front of it. Considerable economy is believed to accrue from this arrangement and the engine is quite capable of handling the work to which it is assigned. While it is too soon to ascertain any savings resulting from less wear of chains and other equipment on this particular rig, the direct drive of the rotary table by the smaller vertical engine probably will produce economies from this source as well as from savings in steam consumption. Such will be true especially when high rotating speeds are used in drilling, as fast table rotation has been found to affect both chains and engines when the drive is through the drawworks by one engine serving as prime mover for both hoisting and rotating.

As indicated in Fig. 1, the mud returns pass through a Link-Belt vibrating screen and into a ditch. The mud is picked up from here by two small American centrifugal pumps, each powered by 7½-hp. U. S. motors; by these pumps it is raised to flow into a rectangular-shaped mud tank shown in accompanying illustrations. This tank is divided into two compartments and the flow in and out of the tank can be diverted into or from either compartment. Either compartment can be utilized for conditioning the mud by adding weight material when heavier mud is needed, by introducing colloidial admixtures if such become necessary, or for thinning out a too viscous fluid. The mud used in drilling El Segundo No. 2 never was more than 75 lb. per cu. ft. and the only treatment necessary was thinning at times to insure the settling out of sand.

The mud-pump suction lines take off from the bottom of the mud tank, as shown in one of the accompanying photographs. Mud fluid is circulated by two Ideal 14 by 7 by 18 steam reciprocating pumps, the pump manifold of which is equipped with Merco Nordstrom valves. The pumps can be compounded either way and also can take the mud direct from the ditch at the screen.

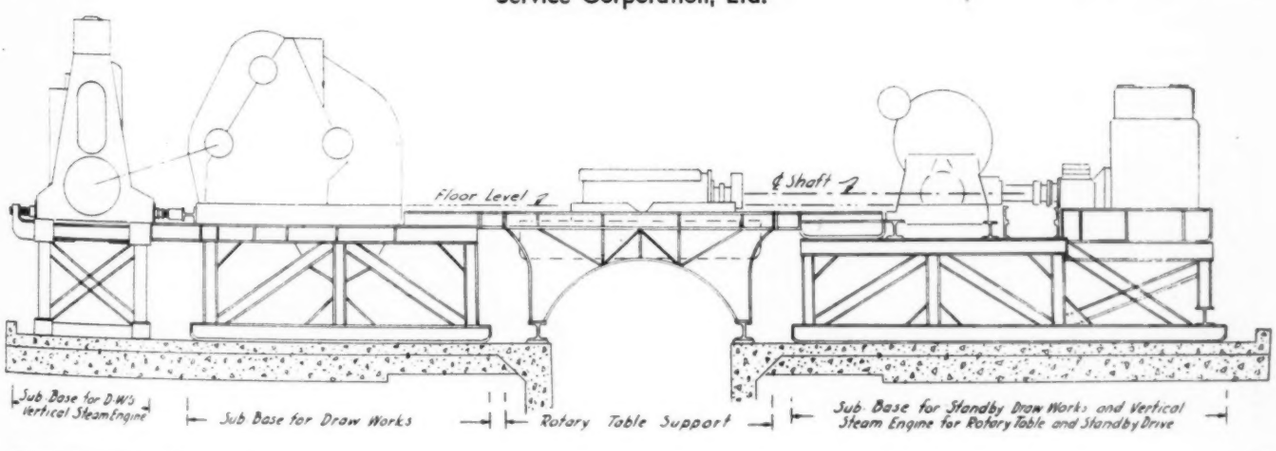
Steam for operations is supplied by three Broderick 250-lb., 110-hp., domeless boilers with Venturi stacks. Each boiler is mounted on skids as a portable unit and conforms with the rest of the equipment on the well; also mounted as a unit are two Wilson-Snyder boiler-feed pumps. As can be seen in the accompanying photograph of the boiler plant, the equipment includes a Foster-Wheeler superheater, which is operated at 100 deg. fahr. superheat. Steam is carried through a 4-in. line to the rig where a Foxboro instrument is used to record the pressure and temperature before it goes into the engine.

In drilling the El Segundo No. 2 well, 4½-in. Hydril external-upset, internal flush-joint drill pipe was used. Drilling from the surface to approximately 4300 ft. was done with Zublin bits but from that point on rock bits were necessary. Both Crum-Brainard and Hughes Tri-Cone bits were then used. During drilling a Baash-Ross heavy drill collar was run above the bit.

A string of 11¾-in. casing was cemented at 995 feet. Drilling was then continued to 7274 ft. where 6⅝-in. casing, equipped with a Baker float shoe and float collar, was cemented. The top of the sand was struck at 7287 feet. Three cores were taken with a Dean core barrel near the top of the sand, two of the cores showing shale and the third consisting almost entirely of sand. Schist was encountered at a depth of 7344 ft. and cores then were taken to 7368 ft., the total depth of the well.

The Christmas tree then was installed without dismantling any of the sub-base, the rotary table support being so designed as to provide this convenience in completing the well. All units of the drilling base assembly will be removed and transported to another location as soon as the well is put on production. If and when the well has to be pumped, a flooring will be placed over the cellar and whatever pumping equipment is decided upon installed.

Fig. 2. This side elevation shows clearly the four units comprising the unitized drilling base assembly designed by Royalty Service Corporation, Ltd.


Floor Level
℄ Shaft
Sub Base for D.W's Vertical Steam Engine
Sub Base for Draw Works
Rotary Table Support
Sub Base for Standby Draw Works and Vertical Steam Engine for Rotary Table and Standby Drive

Electric Power Required for Pumping Oil Wells

By W. H. STUEVE[1]

Results of an investigation of oil-well pumping operations indicate the relative efficiencies of different pumping methods and how depth influences electric power requirements

HOW much electric power is required to pump oil wells? This is a question that has been asked many times. This interest doubtless is due to the great number of electric-motor-operated pumps that have been installed in the oil fields in recent years.

In the face of free gas for fuel—usually conveniently available on oil leases—cheap operating labor, and improvements in prime movers, the use of electric power has gone forward steadily, and today it is found to be gaining in favor among operators, but the choice of the manner in which the electric power is procured is dependent upon a great variety of economic situations.

The factors influencing the amount of electric power required to pump oil wells are numerous, and a great many circumstances can affect the choice of pumping equipment for any given lease. A few of the important factors are mentioned in order to justify the present methods employed by operators to produce their oil.

1. Depth of the producing oil horizon
2. Spacing of the wells
3. Allowable production based on potential
4. Fluid level in the well
5. Gas/oil ratio
6. Condition of lease terrain
7. Water encroachment
8. Method of taking potential
9. Basis of proration
10. Condition of hole

These factors, and many others not enumerated, all enter into the problem of selecting the most economical pumping equipment; but it is assumed for purposes of this discussion that the producers have made the proper selection and are relying on such equipment to produce results. It would appear that if information could be obtained regarding the actual amount of electric power purchased or produced, together with the amount of fluid (oil and water) produced, then the averages so determined would be of some value to the industry.

The beam pump and also the central power actuating pumping jacks are used more extensively than any other form of pumping equipment. Perhaps 90 percent or more of the oil wells today are operated in this manner, but in recent years the submerged centrifugal pump and bottom-hole hydraulic-actuated pump have come into prominence and use.

Supporting data, showing the electric energy actually consumed from a great number of leases situated over a wide territory, have been obtained for the following methods of producing oil:

1. Central electric motor power operating surface rods and well jacks.
2. Beam wells with individual motors at each well.
3. Submerged electric-motor-driven centrifugal pump.
4. Reciprocating bottom-hole hydraulic-actuated pump.

Lease properties that have been in operation for a great many years were selected for study. This was done to eliminate data that might appear to favor some one method of procuring production, or might appear to favor some one manufacturer of pumping equipment.

As already stated, types of electric

[1]Oklahoma Gas and Electric Company, Oklahoma City, Oklahoma.

Fig. 1. Showing relation between pumping depth and electric metered energy, supporting data from Tables 1, 2, 3, and 4

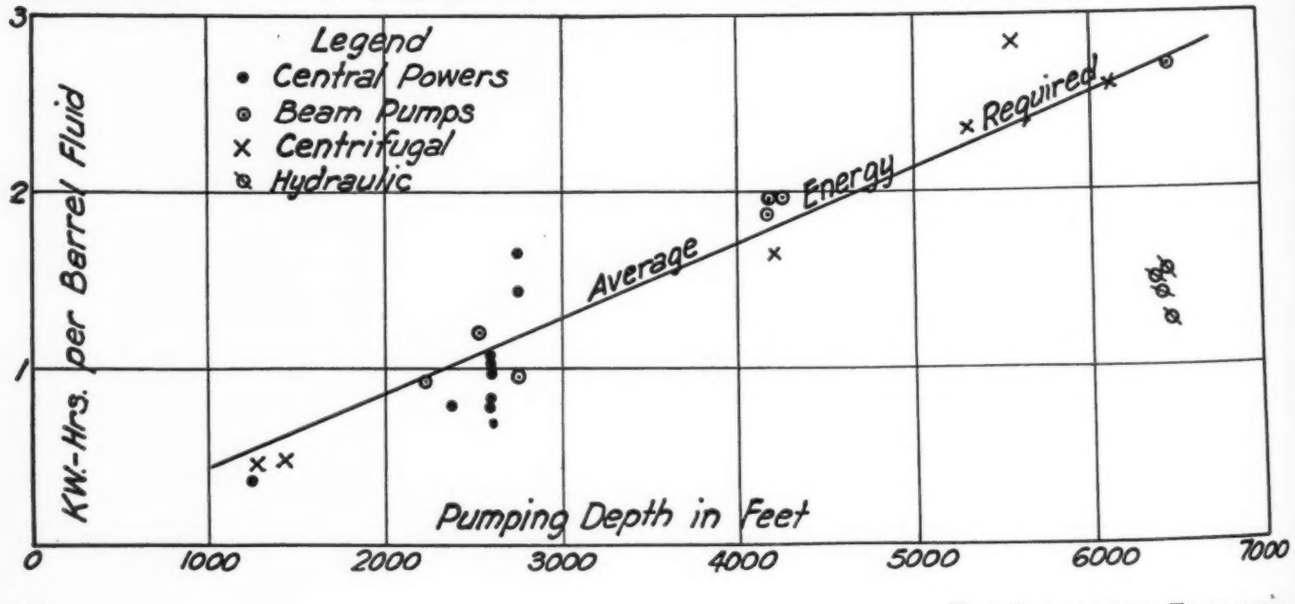


TABLE 1

Electric Energy and Barrels of Fluid Produced by Central Powers

No. of Wells Pumped	Average Length of Shackle Rods ft.	Weighted Average Approx. Depth of Wells ft.	Barrels Actual Monthly Production .85 Oil	1.12 Water	Total Fluid Bbl.	Total Fluid Sp. Gr.	Actual Electric Energy Purchased kw-hr.	Vol. Effy.	Actual kw-hr. per bbl. of Fluid	Percent Overall Effy. Electric Meter to Fluid in Tank
(a) 5	1,320	2,600	6,480	5,000	11,480	.97	12,170	.50	1.05	31.6
(b) 13	1,100	2,600	7,320	11,800	19,120	1.02	18,900	.47	.99	35.6
(c) 9	780	2,600	9,800	3,590	13,390	.92	10,770	.66	.81	39.6
(d) 8	1,400	2,600	5,550	12,600	18,150	1.04	14,300	.57	.79	45.2
(e) 14	1,100	2,600	4,720	24,020	28,740	1.07	19,700	.62	.69	53.0
(f) 11	800	2,600	5,000	9,000	14,000	1.02	14,400	.40	1.03	34.1
(g) 8	750	2,750	1,410	3,870	5,280	1.04	7,500	.47	1.42	26.7
(h) 4	460	2,770	1,140	3,660	4,800	1.06	8,040	.51	1.67	23.2
(i) 12	1,180	2,380	12,000	1,680	13,680	.89	11,000	.....	.80	34.9
(j) 12	1,235	1,250	10,500	100	10,600	.85	3,500	.....	.37	38.0

motors, size of tubing, amount of gas being produced with the fluid, size of working barrel, balancing of rod load, and all refinements of pumping equipment and operation, are not taken into account in this study, as it must be assumed that the producer has investigated all methods of producing his oil and has made a wise selection that is in keeping with good engineering practices.

Central Power

When oil wells are on compact leases on 10-acre spacing, are of relatively shallow depths (1000 to 2500 ft.), and of relatively small production (five to 100 bbl. daily), central powers are used extensively. Table I is submitted showing data obtained from ten such leases.

A review of Table I discloses that the weighted average amount of electric energy consumed by 60 wells on six leases (a) to (f), pumping from an average depth of 2600 ft., is .86 kw-hr. per bbl. of fluid, having a specific gravity of 1.02. The weighted average mechanical efficiency of the entire group of 60 wells is 41 percent, and the average volumetric efficiency of the working barrel for the entire group of 60 wells is 54.5 percent. Another interesting rule, which seems to hold true of data for leases (a), (b), (c), (d), and (e), is that the power required is almost proportional to the surface shackle rod length used, also that the volumetric efficiency of the working barrel is greater as the length of surface shackle rod is reduced. Lease (f) does not seem to conform to this rule; however, the major portion of the data indicates the merit of this conclusion. It also may be said that as 41 percent of the actual electric energy input goes for useful work performed in lifting the fluid having a specific gravity of 1.02, then if fluid being produced were oil having a specific gravity of .85, instead of a combination of water and oil, the energy required in such case would be reduced to .80 kw-hr. per bbl. of oil lifted.

Beam Wells

When oil wells require pumping from depths much in excess of 2500 ft., individual beam pumps usually are installed at each well, and the data shown in Table 2 are representative of such condition.

The leases are widely scattered and the electric power input is measured at the nearest point on the section line to the wells. A total of six wells on two leases and at a depth of 2210 ft., 59 wells on 16 leases and at a depth of 2540 ft., 11 wells on four leases and at a depth of 2750 ft., 116 wells on 29 leases and at a depth of 4200 ft., and 15 wells on two leases at a depth of 6430 ft. were studied from operations in Oklahoma and Kansas.

In reviewing Table 2, it is noted that the overall mechanical efficiency of all the wells is approximately 33 percent as an average. The energy required to pump a bbl. of fluid is approximately directly proportional to depth from which the fluid is pumped. The poorest mechanical efficiency is obtained from the deepest wells shown as (g) in the table, and the best mechanical efficiency is obtained from the shallow wells (a) and (c), leading to the conclusion that better balancing of the rod load to procure an even flow of power energy input can be accomplished with shallow wells.

Motor-Driven Submerged Centrifugal Pump

The data submitted up to this point have to do with oil-well pumps using rod lines and pumping through tubing, but, as already stated, other types of pumps recently have been developed and come into use.

One such type of pumping unit is the electric-motor-driven centrifugal pump, with the motor and pump suspended in the well on the tubing, the electric power being delivered through a cable alongside the tubing. This pumping unit does not employ sucker rods and has a capacity for pumping large volumes of fluid.

Data for this type of centrifugal bottom-hole pump are shown in Table 3 for six operations at depths of submergence from 1200 to 6500 feet.

Note from Table 3 that the energy required to pump fluid from the depths shown is directly proportional to such depths. The overall efficiency for shallow depths seems to be higher than the efficiency achieved at greater depths. This is probably due to several factors,

TABLE 2

Electric Energy and Barrels of Fluid Produced by Individual Motor Beam Wells

Number of Wells Pumped	Weighted Average Approx. Depth of Wells in ft.	Barrels Actual Monthly Production .85 Oil	*1.12 Water	Total Fluid Bbl.	Total Fluid Sp. Gr.	Actual Electric Energy Purchased kw-hr.	Actual kw-hr. per bbl. of Fluid	Percent Overall Effy. Electric Meter to Fluid in Tank
(a) 6	2,210	2,610	30,900	33,510	1.10	30,300	.91	35.4
(b) 59	2,540	35,000	121,000	156,000	1.06	187,500	1.20	33.8
(c) 11	2,750	19,980	8,760	28,740	.90	27,068	.94	35.0
(d) 29	4,186	37,004	136,390	173,394	1.06	321,960	1.86	31.6
(e) 21	4,238	29,490	63,300	92,790	1.03	181,997	1.97	33.8
(f) 66	4,260	54,203	92,852	147,055	1.03	287,744	1.95	33.9
(g) 15	6,430	36 300	1,950	38,250	.86*	103,000	2.70	27.0

*Sp. Gr. of Water 1.15 for group (g).

TABLE 3

Electric Energy and Barrels of Fluid Produced by Motor-Driven Centrifugal Pump

No. of Wells Pumped	Depth of Pump Suction ft.	Actual Barrels Production .85 Oil	1.15 Water	Total Fluid Bbl.	Total Fluid Sp. Gr.	Actual Electric Energy Input kw-hr.	Actual kw-hr. per bbl. Fluid	Average bbl. of Fluid Produced Daily	Percent Overall Mechanical Effy. Electric Meter to Tank
1	1,408	18,582	238,100	256,682	1.13	126,360	.49	3,140	43.2
1	1,273	11,159	189,000	200,159	1.14	93,900	.47	3,230	41.0
1	4,200	5,111	71,087	76,198	1.13	125,000	1.64	2,450	38.4
1	5,300	10,050	39,500	49,550	1.09	117,000	2.36	1,600	32.6
1	5,550	2,329	42,177	44,506	1.13	126,000	2.84	1,430	29.4
1	6,100	6,000	27,000	33,000	1.09	85,000	2.58	1,100	34.3

TABLE 4

Electric Energy and Barrels of Fluid Produced by Hydraulic Bottom-Hole Pump

No. of Wells Pumped	Depth of Wells in ft.	Barrels Actual Monthly Production				Actual Electric Energy Purchased kw-hr.	Actual kw-hr. per bbl. of Fluid	Bbl. of Fluid Produced Daily	Percent Overall Effy. Electric Meter to Fluid in Tank
		.85 Oil	1.15 Water	Total Fluid					
				Bbl.	Sp. Gr.				
1	6,400	5,036	5,250	10,286	1.00	14,480	1.41	332	60.5
1	6,410	3,856	5,330	9,186	1.03	14,040	1.53	296	57.5
1	6,400	9,878	2,470	12,348	.91	17,640	1.43	398	54.0
1	6,450	10,100	100	10,200	.85	13,100	1.28	335	56.8

one of which is the lower power cable loss in a short cable; further, any centrifugal pump will be more efficient when handling large volumes of fluid. The motor used is approximately 90 percent efficient and the pump for shallow depths is approximately 60 percent efficient; the remainder of the losses no doubt occur in the cable.

Hydraulic-Actuated Bottom-Hole Pump

At the present time approximately 50 pump units are in operation in Oklahoma pumping from depths of about 6500 feet. They are "reciprocating pumps actuated by hydraulic power at the bottom of the hole."

The hydraulic power is generated on the surface and transmitted to the submerged plunger pump through a string of small tubing (1¼-in.) inserted inside the flow string tubing of 3-in. diameter. Wells having allowables of from 300 to 700 bbl. daily are being produced successfully by this type of pumping unit.

The results obtained are shown in Table 4.

From Table 4 note that the overall mechanical efficiency is greater than any other method of pumping disclosed in Tables 1, 2, and 3. The discrepancy in efficiency, as indicated in the results, inasmuch as all four wells are being pumped from about the same depth, probably can be accounted for by the gradual formation of paraffin in the annular space between the hydraulic power tubing and the flow tubing.

The weighted average energy for the four wells studied, required to pump one bbl. of fluid of an average specific gravity of .95, is 1.41 kw-hr., representing an overall efficiency of 57 percent; whereas if the fluid were all oil, the energy required to pump one bbl. of oil from 6415 ft. average depth, would be 1.34 kw-hr. This type of pumping unit also can be used for taking potentials in conjunction with gas-lifting, similar to the centrifugal bottom-hole pump. It has not been used to any considerable extent for shallower wells.

Conclusions

It is concluded that the best average pumping efficiency obtainable from beam pumps is approximately 35 percent. The efficiency of central power pumping is slightly higher but apparently it can not be improved upon; and this seems to hold true also for the centrifugal bottom-hole pump. The hydraulic-actuated pump has the greatest efficiency of any studied, but its limitations in capacity preclude its use when volumes greater than 400 to 700 bbl. from depths of 6500 ft. are considered.

In order that the industry may know how much energy will be required in their contemplated pumping operations for any desired pumping depth, the average results from Tables 1, 2, 3, and 4 are plotted graphically in Fig. 1, with depth in feet versus electric energy expressed in kw-hr. per bbl. of fluid.

Slight corrections should be made to reduce all results to one basis of fluid specific gravity, tending to lower somewhat the average curve, but as the whole study was based on average conditions found in the field—a condition that would prevail finally on the contemplated lease—this change was not deemed desirable.

Some information has been assembled for beam pump operations, a part of which shows lower and also higher results than the "average line" in Fig. 1, so the average results can not be taken as conclusive when applied to certain individual leases; the graph is submitted merely for guidance or reference.

Theoretical data on pumping energy are available in great quantities, but positive factual information best can be obtained from electric-metered operations.

It is interesting to note, after totaling all the fluid shown in the tables, the relatively small power-lifting expense as compared with the market value of the product produced. This study covers the lifting of 1,486,814 bbl. of fluid from all depths and the total electric energy consumed is 1,977,869 kw-hr., or an average of 1.32 kw-hr. per bbl. of fluid, or 5.85 kw-hr. per bbl. of oil lifted. With the possibility that electric energy could be purchased in most instances for one cent per kw-hr., the total lifting costs would be only about four percent of the total value of the product, which compares favorably with most industries of a similar nature.

Packing Tubing Heads

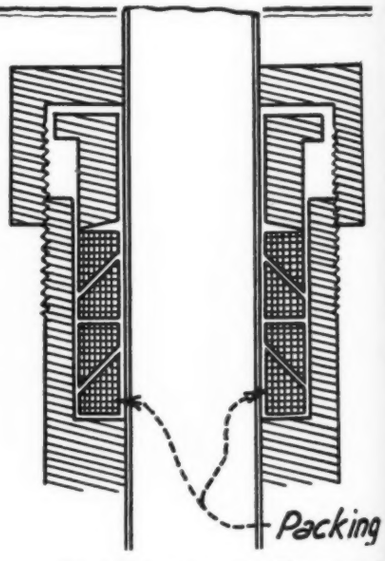
By W. J. GRISSETT[1]

LARGE packing glands and some tubing-head glands require that extreme pressure be exerted by packing nuts and glands to obtain a tight joint when ordinary packings are used. Some of the most troublesome packing-off jobs can be made easy by the use of one or more pairs of rings of Dresser coupling rubbers, used with or without other packing.

The first ring of the pair is placed in the gland with the beveled side turned up and out; the second ring is placed with the beveled portion turned down and toward the inside. The ends of the rings should be fitted to each other and cut at about a 45-deg. angle.

Because of the wedging action of the beveled rings, comparatively light pressure on the gland follower is required to prevent leaks.

[1]Big Lake Oil Company, Texon, Texas.



A Look Ahead in Oil

By CAMPBELL OSBORN

NOT many subjects are more important in America than the future course of oil. John Smith is concerned with it, for quick individual transportation is perhaps the outstanding characteristic of modern life. Industry generally is dependent on it. National safety would be jeopardized without it. Far-flung governments dicker over it. Even the meanest office-seeker appreciates its political potentialities. Well does it deserve this attention because no first-class nation can exist without an adequate oil supply.

Informed men doubt not the amount of petroleum that America will require. Already it is annually not far from the stupendous figure of a billion barrels. Ten years from now it may be two billions. In fat years the annual gains will be more than ten percent.

There is no such unanimity of opinion, however, as to where the oil will come from. One well-known petroleum executive, long experienced in geology, has stated that ten or a dozen 100,000,000-bbl. fields must be discovered annually. Another whose opinion is equally valuable says that new reserves to the amount of two billion bbl. must be found this year and next, and that between 1938 and 1942 more than this quantity will be needed. Some oil men say it cannot be done; but more hold the view that the oil can be found; that if necessary new methods will be devised to find and produce it; but that far more test wells will be required than the number in prospect at this time.

Men familiar with geological conditions know that America contains ample undiscovered oil. Two-thirds of the nation is not geologically unfavorable, and with sufficient exploration it is highly probable that enough oil can be found to supply our needs until science harnesses another source of energy. But the time when this oil will be produced, the rate at which it will be taken from the ground, the prices it will bring, and the manner in which it will be transported, refined, and marketed are other stories. Governments, federal and state, will continue to take a hand in the oil business, but by and large these stories will be written by the executives of the maior companies, principally those who determine the prices to be posted for crude oil at the wells. No one knows in the long run what these stroies will be, not even the executives themselves, but all know that they will be interesting, interesting to hundreds of thousands of stockholders, interesting to the numerous small fish in the great multi-billion-dollar oil pool, and interesting to the owners of the already almost countless but ever-increasing number of motor vehicles that characterize American life. The immediate outlook, however, is not so difficult to foresee. History has a way of repeating itself and to close students of oil conditions since the beginning of the industry it is not impossible to see the probabilities that lie ahead.

Many years ago the writer had the good fortune to read the summarized opinion of a great man concerning the essentials for arriving at a sound conclusion. Weigh the facts and technique, he said, and if people are involved temper your judgment with the reaction of flesh and blood.

For 20 years the writer has been a close student of the oil business. He has read nearly all there is to be read that is worth while on the subject. Much of the time he has observed the oil business more or less as an onlooker. He knows most of the major executives of this industry, at least how they think. He does not know many of them intimately or personally, but he has talked to lots of them, listened to them, observed them, read what they wrote. Collectively they are nearly always wrong, and they admit it, and in the writer's judgment they are as wrong today in their stated views that the visible oil supply is abundant, that prices should be depressed, as they were wrong in 1920 when they raised prices to $3.50 a bbl., and wrong again in 1928 to 1930 when they held prices in the face of America's greatest oil deluge. Of course they had and have good and sufficient business reasons for doing these things, and the writer knows what they were and are, and a discussion of them has no place here, but, then as now, their attitude is harmful to themselves, to small companies, and to consumers. More wildcats and higher prices are needed now to get America her future oil, not $3.00 a bbl., but before long perhaps $2.00, and unless prices are soon put up the industry and the public will suffer in coming years.

Would the industry have suffered from 25-cent oil in 1932 if economic law had been heeded and prices cut in 1927? It would not. Will the public suffer from $3.00 oil in 1940 if demand and supply are heeded now and prices put where they should be in order properly to stimulate production and to find reserves? It will not. No group of companies, however strong, can long resist the rising tide of overproduction nor the ebb of undersupply, and the longer sound price changes based on the relation of demand to the actual and proved potential supply are postponed the more inevitable they become and the more drastic will they be. The price posters will be forced, reluctantly perhaps, but surely none the less, slightly to increase prices next year and perhaps the next and finally to boost them to the sky, and if they postpone these moves too long they will be pinched for oil.

The Rising Demand

Fifteen years ago economists dilated at great length upon the saturation point in automobile use. Many feared it was close at hand. Consumption had grown continuously for many years at substantial rates. In some there had been almost unbelievable gains; but subsequent events have shown that this point of saturation, like the will-o-the-wisp, can not be laid hold of. The growth in oil consumption, though slow, persisted through the great depression, and in the last two years again old records have been shattered.

It seems now that no one can say when the growth in the use of oil will stop. Consumption in 1937 already is far ahead of early conservative views. Does not every adult person and every boy and girl from the earliest teens desire a motor car? Will truck consumption stop growing until all freight that economically can be so handled is hauled on the public highways? And what are the prospects for a decline in the population and in American commercial activity? Will bus use go down? What of the trailer? Finally, is it reasonable to expect that ultimately engineering genius will stop short of a fool-proof plane within the reach of nearly every purse?

What of the Reserves?

The needed oil can not be plucked from thin air. With great respect for the ability of the geologists and geophysicists, new fields are hard to find. There is plenty of territory worthy of exploration, but the oil has accumulated in small spots over these vast areas and of the structures the scientists may find only a few contain petroleum. The finding will take many wells—more than are being put down

now—and will cost much money, and the time to stimulate the search is when the reserves are declining, and that has been the condition for several years.

It takes no genius to arrive at the conclusion that the proved oil reserves of America have been going off since 1932. There have been no great finds since East Texas. Rodessa is a remarkable oil pool and there have been numerous small discoveries, but East Texas was a major region. It would be unreasonable to expect another find like it in a decade, perhaps several decades; and its oil content has been pouring out of thousands of holes for many years.

Oil men know that this field has been handled in no ordinary manner. Production has been more efficient than in the older fields and the water has been held back. It will still produce a lot of oil, but the deadly flow of water is on the way and some day it will take the field. And woe unto the oil man and the consumer unless something is found before long to take its place.

Prices may be put up a little next year, but judging from the attitude of the price makers the price stimulus necessary to find large new reserves will be postponed as in 1917 until the pinch comes and then crude oil values will be very high and there will be another oil deluge. And so far as the supply and price are concerned, and the timing and rate of production, that will be the course of oil.

How About Governmental Control?

It is unnecessary to remind oil men that the government is taking a large part in their business. What already has been done is well known. Intrastate control is under the jurisdiction of the oil-producing states. Thus far it has been largely confined to drilling and production. The power of the Federal Government is limited by the Constitution to interstate transportation. Beyond that it can only advise.

Governments, state and federal, doubtless will continue to take a hand in the oil business. Where this tendency will end no one knows. Perhaps the regulation of the pipe lines will be extended. Congress has the power to control them as it does the railroads. Some day they may be divorced from their affiliated marketing and refining companies. Oil might be made a public utility and congressional control extended to the other branches of the oil business, but that would take an amendment to the Constitution.

State control thus far has stopped at granting drilling permits and prorating production in the interest of conservation. It is within the power of the states in the interest of the general welfare to refuse drilling permits if they feel new oil is not needed, but individually they would be slow to do this because of jealousy over the mutual share of each state in the general market. An oil states compact, irrevocably joined by all the producing states, a compact with teeth in it, would enable them to hurdle this difficulty. Proration put the government in the oil business to stay and what will occur in the future will depend upon where oil prices go, whether an adequate supply is maintained, and the policy of the party in power.

Pipe Line Transportation

From an operating standpoint there probably will be no material change in this end of the oil business for a long time. It is the most conservative branch of the petroleum industry. As new lines are constructed and old ones replaced modern methods of ditching and coupling will be used and the more improved pumps and power plants will supersede the obsolete. This will continue the present trend toward reduced losses and lowered costs of pumping.

The Technique of Production

One of the principal benefits derived by the oil business from governmental control has been the stimulus it gave to getting more oil out of the sands at lower lifting costs. In prorated fields there is less feverish competitive drilling, and gone is the old haphazard way of producing oil with open flowing and pumping. The more efficient use of reservoir gas in lifting, repressuring, the water drive, and acidizing are here to stay. Unquestionably the yield per unit of the oil reservoirs has been increased and the lifting cost per foot has been lowered. Unfortunately the allowable production not always has been based on the most efficient way of utilizing pressures. As the new technique yields new facts more and more oil will be recovered from a given amount of sand, and more information will be brought to light on the original content of sand bodies, and it is hoped the courts and regulatory bodies will not be too slow in recognizing what the engineers and geologists thus learn.

New fields will be deeper, for the production engineer and driller have learned much, and the only limiting factor to holes in the ground several times deeper than the horizons that have yielded America her oil will be the cost. Deep drilling is very costly and the deeper the structure the more difficult and expensive is the scientific work necessary to locate it.

Refining Yields and Quality

In refining the chemist and engineer are running races, the one to improve quality and the other to raise yields and lower costs. The refiner of only a quarter of a century ago would be lost in a modern plant. Gasoline yields have been doubled and the end is not yet in sight. Once cracking was scoffed at and straight-run high-gravity gasoline sold at a premium. Automotive research has shown that some methods of processing yield a higher anti-knock gasoline than others and the refiners were quick to take advantage of it. There is more power in motor fuel now than there was a few years ago, and only a beginning has been made in this field.

Time was when the undesirable wax in lubricating oil was removed by cold settling and centrifugal processes. Later it was found that solvents could be used and both the quantity and quality of internal combustion motor lubricants have been thus increased and improved. The solvent processes will be more widely used in future years and it seems probable that engineers and chemists will find still newer methods of making oils that will stand the gaff of hot cylinders for a longer time than the lubricants of yesterday.

Judging the Future

There is no better light to guide the feet of oil men than the lamp of past experience. Viewed in this light the demand will grow steadily for many years. In some there will be large and unexpected gains.

America is capable of yielding all the oil we need, but it will take more drilling and more money for finding than is now in sight. The scientists are resourceful and if necessary they will devise new discovery methods, but it may take $2.50 oil before they do this.

The yield and quality of gasoline and lubricants will continue to improve. Drilling will be deeper and the percent of recovery will increase.

There will be no crude oil price increase of consequence this year, despite declining reserves. Next year the price structure may be slightly higher. When the pinch comes and the nation is immediately faced with shortage, prices will be put to figures more than double present quotations, and there will be a cry of famine. High prices and limited reserves will bring on more governmental control. Science and drilling will be so stimulated that there will come another deluge and the unmined reserves again will be increased far beyond consumptive requirements and again state and federal regulations will be extended.

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Bleaching Clay

Part 3

By Rafael Fussteig

Behavior of Oil Constituents in the Absorption Process

UNDER the action of active adsorbents different hydrocarbons can be adsorbed, or, first polymerized, then adsorbed. In general, unsaturated hydrocarbons are the most readily adsorbable, the aromatic second, the naphthenes third, and the paraffins the least adsorbable. There are, however, exceptions to this general rule. The adsorption of hydrocarbons of the same class increases with the increase in molecular weight. For example, paraffin waxes of high molecular weight, are more readily adsorbed than naphthenes of high molecular weight. It follows from this that the higher the molecular weight of the paraffin waxes the more difficult it is to avoid the adsorption of the undesirable impurities from the above-mentioned hydrocarbons. As a matter of fact Graefe[1] used more bleaching clay to decolorize cerine than that of paraffin waxes of low molecular weight.

As paraffin waxes of higher molecular weight are more readily adsorbed than those of low molecular weight, a lubricating oil containing wax can be diluted with naphtha,[2] chilled to cause coagulation of the wax insofar as possible, and then treated with the adsorbent for the adsorption of the wax, and the whole filtrated.

The decoloration of a heavy oil and separation of the wax can be accomplished by using the same adsorbent; first, by heating the oil and adsorbent to a temperature suitable for decolorization, then cooling it to below the melting point of paraffin waxes to effect more complete congelation of the adsorbent.

As already mentioned, the unsaturated hydrocarbons are not only adsorbed but also may be polymerized. The degree of reactivity of the various unsaturated hydrocarbons, of course, differs from one series to another. Hydrocarbons of the ethylene series lend themselves readily to polymerization, although the time required is different for different members. As opposed to this group, hydrocarbons of the acetylene series were not polymerized after being in contact with a fuller's earth for two years. It must be noted here also that adsorption increases with the complexity of the molecular structure. For instance, the isomeric hydrocarbons will be adsorbed more readily than the same normal hydrocarbons. This phenomena can be observed during the decoloration process of oils rich in asphaltic compounds. No complete decoloration will be stated here. The reason for this is that only the isomeric asphalts were removed from the oil.

It can be seen, therefore, that the adsorption of these impurities are one of the most important problems in the refining industry. As is known, the principal constituents of these impurities are compounds of tar and are resin-like, they contain oxygen and belong to the highest molecular hydrocarbons found in crude oil. These substances are strongly reactive toward adsorbents, a property utilized in treating the oils for color, and in certain instances, in removing pitchy substances from cracked oils. According to the studies of Gurwitsch, floridine adsorbs up to 12 percent of its weight of this type of compound, wherein nine to ten percent are adsorbed in that manner that can not be extracted from the earth even with a great excess of gasoline. According to the writer's investigations, the different fractions of the same crude present tar and resin-like hydrocarbons of the same chemical group, but containing different volumes of oxygen, different iodine numbers, different molecular weights, etc.

These characteristics increase proportionally from the lower fractions to the higher fractions. Viewing this process in the light of what has been said, one is forced to the conclusion that the tar and resin-like hydrocarbons will be removed more readily from the heavy lubricating stock than from the light lubricating oil; however, it must be noted that the degree of adsorption depends not only on the nature of the adsorptive but also on that of the solvent. The greater the power of attraction of the solvent to the adsorbent, the smaller will be the attraction of the adsorptive to the adsorbent. It follows, therefore, that the tar and resin-like hydrocarbons will be less readily adsorbed from a solution of benzol than from gasoline. On the contrary, when extracting a used bleaching clay by means of gasoline, a portion of the adsorptive will remain in the channels of the clay. This remaining adsorptive can be removed by extraction with benzol. Holde and Eickman[3] have established that the above-mentioned tar and resin-like hydrocarbons will be held back the greatest by the adsorbent whose specific gravity, oxygen content, and iodine number are the highest.

Hydrocarbons containing oxygen will be absorbed readily due to their carboxyl group characteristics. The higher molecular acids will be adsorbed more readily than those of lower molecular weight. It must be stated that these acids cannot be entirely extracted from the adsorbent. On the other hand only a few of the adsorbents can remove completely the organic acids from lubricating oils, and this use of fuller's earth is seldom attempted, as the large quantity required is uneconomical. It is, therefore necessary to use in this instance natural bleaching clays whose channels are covered in the interior wall with a thin layer of inorganic alkali compounds. This layer is able simultaneously to neutralize and adsorb the organic acids. All adsorbents remove from the oil strong acid substances, such as sulphuric and sulphonic acids.

In some instances the acid-oil is neutralized with a slight excess of caustic soda solution, as much as possible of the water and its dissolved constituents being withdrawn, the slightly alkaline oil then commingled with the adsorbent, and when heated almost all the water is evaporated. Under these conditions the concentrated alkaline combines more completely with the weak organic acids to form soaps that are fairly well removed by the adsorbent. Koetschau[4] has established that silica gel in combination with a small amount of acid is much more efficient for removing the acids than silica gel alone. Evers and Schmidt[5] have shown according to their studies that the rate of oxidation of oils is increased by dispersing the oil on silica gel impregnated with an oxide catalyst, vanadium, molybdenum, or tungsten oxides in combination with ferric oxide.

Investigations by the writer have established that during the cracking process, the tar and resin-like hydrocarbons are split in such a manner that certain lower molecular unsaturated hydrocarbons go into reaction with the split oxygen, resulting in a loose combination between the hydrocarbons and the oxygen. This oxygen acts as a catalyst, causing in the intermediate reactions the polymerization of different hydrocarbons into gums. These hydrocarbons can be removed by passing the oil vapors through a bed of natural bleaching clay, but never through an artificially-activated bleaching clay. During the adsorption

(Continued on page 62)

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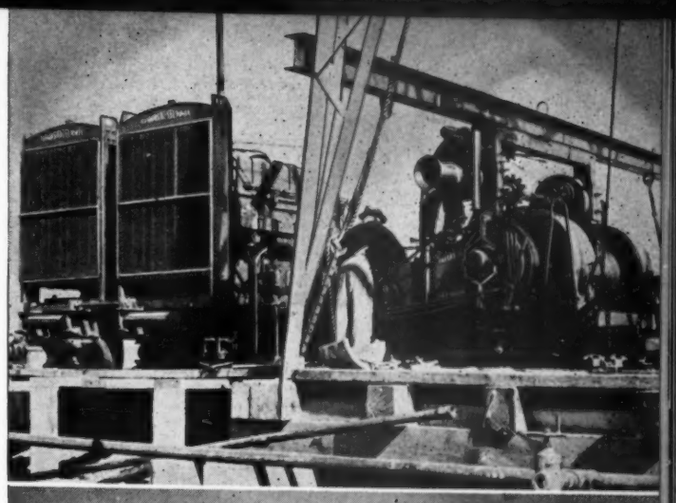

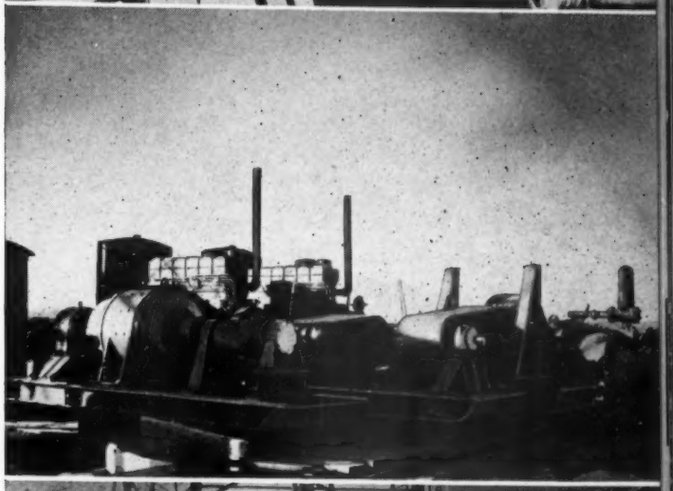

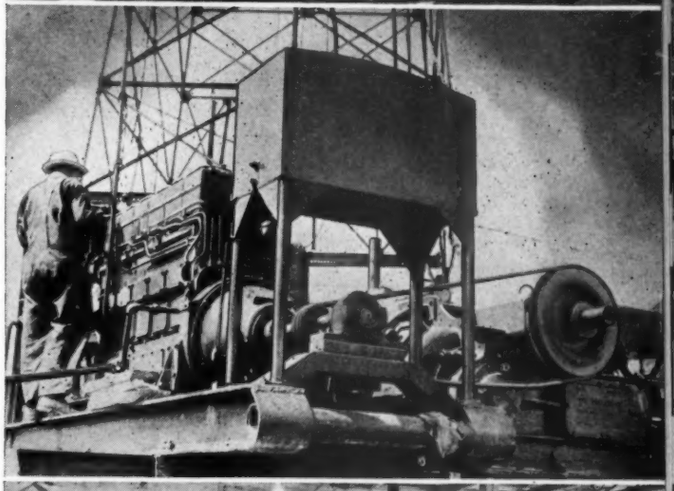

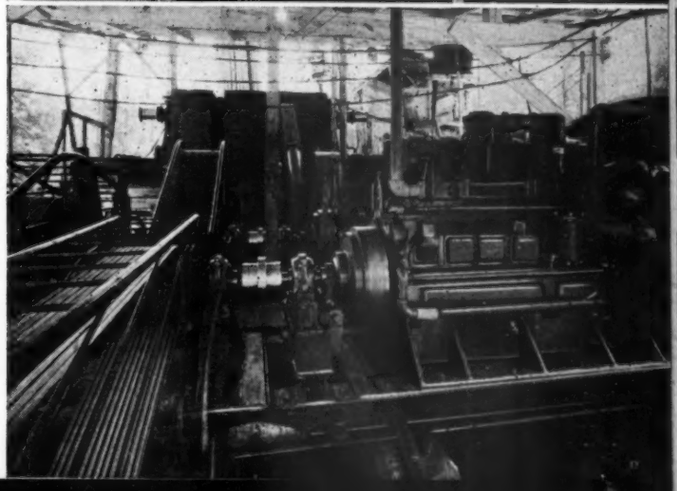

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Mid-Continent Territory

(Continued from page 58)

process of the latter the traces of aluminum chloride cause the formation of $COCl_2$, a combination that accelerates the formation of gums.

Consider now the adsorption of nitrogen compounds. Nitrogen compounds to a certain extent are removed from the oil by adsorption. J. T. Travers[6] has proposed a process for removing foul odors of indole, mercaptans, skatole in air or gases by scrubbing the gas with a suspension of marl in water. Hilpin[7] and Schneeberger filtered through fuller's earth a crude oil of 0.76 percent nitrogen content. After filtration the nitrogen content was found to decrease to 0.08 percent.

Nitrogen compounds react with sulphuric acid, and these salts can be removed by treating the acid oil in contact with finely powdered material. The free bases later can be released from the acid and clay by adding caustic soda, which neutralizes the acid and frees the bases.

Crude oil also can contain different sulphur compounds, grouped as follows:

Group	*Formula*
Hydrogen sulphide	H_2S
Free sulphur	S
Mercaptans	R-SH
Disulphides	R-S-S-R
Sulphides	R-S-R
Thiophene	C_4H_4S

All these compounds are undesirable in oils and gasolines and, therefore, they must be removed. Some adsorbents have an affinity for certain sulphur compounds in oils, though the quantity of adsorbent necessary to effect any marked reduction usually is prohibitive.

Considering all bleaching clays, bauxite has been found to be the best adsorbent for desulphurization, but bauxite first must be dehydrated by so-called calcination. Bauxite activated by heating to a temperature between 400 and 600 deg. cent. is said to adsorb sulphur compounds, especially those in which sulphur is present in an oxidized form. It is suggested that the sulphur compounds be oxidized in the oil before treatment with bauxite, an operation obviously impractical for the cracked products. For removing sulphur compounds, the treatment of oils with oxides of chlorine followed by treatment with bauxite also can be recommended.

The Burma Oil Company grinds bauxite to grains of 10-80 mesh, heating it afterwards in special revolving furnaces at a temperature of more than 600 deg. centigrade. When a kerosene was treated with 80-360 lb. of bauxite per bbl., the desulphurization process resulted in a reduction of the sulphur from 0.134 percent to 0.020 percent when the bauxite was applied hot. When the same amount of bauxite was applied cold the sulphur content was decreased to 0.11 percent. The Anglo Persian Oil Company desulphurizes oils with the aid of bauxite at a temperature of about 200 deg. centigrade. By percolating a California petroleum through fuller's earth[9] it was found that sulphur compounds were retained to a certain extent in the adsorbent. The sulphur content of the original oil was 0.541 percent, while that of the fractions showed was 0.11 to 0.29 percent sulphur.

It has been stated, however, that not all sulphur compounds can be removed by the adsorption of the adsorbent. For example, the elementary sulphur, and the mercaptans remain unattacked during the adsorption process. If elementary sulphur remains even in traces in the oil this presence makes the oil corrosive to metals, and such solution is conducive to the discoloration of the gasoline. The presence of mercaptans causes the lowering of the quality of the gasoline because it goes into reaction with different hydrocarbons. The best method of removing mercaptans and the elementary sulphur is the so-called "doctor treatment," which consists of agitating such oils with a little sulphur (when only mercaptans are present in the oil) and an aqueous alkaline solution of sodium plumbite. Thus it is seen that the adsorbent can be used for the desulphurization of oils only in the event the oil is sweet or negative, i. e., the oil must be free of elementary sulphur and mercaptans.

As mentioned, unsaturated hydrocarbons are the most readily adsorbed, then come the aromatic and naphthenic hydrocarbons, and after them the paraffinic hydrocarbons. The molecular weight plays a very important part, however. For instance, when diluting a mixture of higher molecular polycyclic and paraffinic hydrocarbons in benzol, and then submitting it to an adsorption process, only the paraffinic hydrocarbons are adsorbed.

To prove the correctness of these characteristics Gurwitsch has conducted the following experiment: He took a vaseline, free of tar and resin-like compounds, and treated it in a melted state with 40 percent floridin. The vaseline contained a mixture of paraffinic and naphthenic hydrocarbons, and the melting point of this vaseline was 37.5 deg. centigrade. The treatment with the floridin lowered the paraffin wax content in the vaseline from 9.35 to 6.8 percent, while the melting point was reduced from 37.5 deg. to 33.0 deg. centigrade.

The adsorption of higher molecular paraffinic hydrocarbons also occurs during the decoloration process of vaseline by means of filtration through bleaching clay. The influence of the molecular weight in the adsorption process of a mixture of paraffinic hydrocarbons has been observed by the writer. It has been found that, when treated, a paraffin wax containing paraffinic hydrocarbons in a melted state (melting point, 59 deg. cent.) is melted with 20 percent of the natural bleaching clay "Carlonit," the melting point of this paraffin wax declined to 57 deg. centigrade. The paraffin wax extracted from the used clay had a melting point of 61 deg. centigrade.

Likewise, the melting point of a cerine declined from 85 to 83 deg. cent. after being treated with floridin, while the melting point of the extracted paraffin wax from the adsorbent showed a melting point of 88 deg. centigrade. It can be seen that under certain circumstances it is possible to carry out a fractionation of the components of the same group by means of the proper adsorption process.

Day was the first to prove that the filtration of oils through the coarse-grained clay not only decolors but also causes a fractionation into compounds that differ in specific gravity, viscosity, boiling point, sulphur content, etc. The adsorption of certain classes of hydrocarbons from a solution of others when an oil is passed through a column of adsorbent material is called Day phenomenon. The first fraction is lighter than the second, and has a lower boiling point, the second fraction is lighter than the third, etc. For instance, after filtering a crude oil of 0.915 specific gravity through fuller's earth, the gravities of the successive fractions of the filtered oil were 0.865, 0.879, 0.895, and 0.902.

According to the explanation of Day, the components of the oil rise unequally through the capillary channels of the clay layer. The easily fusible oils rise first, then the viscous oils. To prove the correctness of this theory, Gurwitsch carried out experiments in filtration using grains of sand of great fineness; however, the filtration of an oil through this sand gave a negative result, i. e., no filtration took place. When the same oil was passed through the coarse-grained fuller's earth a favorable fractionation could be observed. Therefore Gurwitsch maintains that the fractionation by filtration does not depend on the surface of the capillaries of the layer but only upon the interior surface of the microscopic and ultramicroscopic channels of the adsorbent. In other words, the sand grains, even

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when of great fineness, are unable to carry out a fractionation of oils because they have no porosity. On the contrary, the coarse-grained fuller's earth is able to cause a fractionation of oils because of its interior porosity.

In further studies, Gurwitsch proved that the adsorptive power, and the filtration capacity, present quite other powers. To prove the correctness of this opinion he diluted a highly viscous lubricating oil in gasoline and after having passed it through a layer of floridin, determined the degree of adsorption of tar, and resin-like compounds, as well as unsaturated hydrocarbons, but he could not observe the adsorption of gasoline. On the other hand, when diluting the same oil with benzol, the adsorption of benzol could be observed. The writer's investigations have determined that a simultaneous adsorption and capillary rise of oils take place during the adsorption process of the oils. The following test tends to support this opinion. The writer has filled two columns with fuller's earth, the first being of great fineness, the second coarse-grained. After a certain time, the filtration in the first column stopped completely. According to the writer's opinion, the rise of the oil accelerates adsorption and fractionation.

There also is an opinion that the fractionation of oils into new components of different specific gravities and viscosities occur in such a manner that the power of adsorption of the clay generally decreases during the filtration, and that the heavier and colored matters rise unadsorbed to the top of the layer. This opinion must be refuted because the oils that rise to the top are decolorized, and the fractions obtained present proper hydrocarbons. Table 1 shows that a true fractionation takes place during filtration. For this purpose an oil with a specifc gravity of 0.920/15 deg. cent., viscosity of 2.4/50 deg. cent., has been used.

Moreover, a further phenomenon in the filtration process might be considered. Certain adsorptives can be displaced from the microscopic channels by other adsorptives. For instance, when a floridin saturated with paraffinic hydrocarbons is subjected to the adsorption process with a solution of asphaltic compounds the latter will displace the adsorbed paraffinic hydrocarbons from the interior. Of course, the asphaltic compounds enter the microscopic channels.

It can be seen from what has been written that the writer has considered the adsorption of all oil components by means of bleaching clay. It must be noted here also that when using an excess of bleaching clay during the adsorption process all components can be adsorbed, but when the volume of bleaching clay is not sufficient to adsorb all these components only certain compounds will be adsorbed. In this event a "contest" between the oil components takes place; however, the complicated processes and equilibria that result from this phenomenon are not yet entirely investigated and explained. Viewing this phenomenon in the light of all theories and opinions discussed in this article, however, it can be concluded that the different oil compounds are proportionally limited to the adsorbent when insufficient quantities of the adsorbent are used, i. e., the more readily a component in free state is adsorbed, the more readily will it be adsorbed when mixed with other components. Since, as mentioned, the tar and resin-like compounds are most readily adsorbed from oil, this phenomenon is used chiefly in the refining industry.

Literature Cited

[1]Petroleum, III, p. 294.
[2]Brit. Pat. 259, 553.
[3]Petroleum, II, No. 24.
[4]Zeitsch, Ang. Chemie, 1926, p. 210.
[5]Wiss, Veröff. Siemens Concern, 1926, pp. 210, 228.
[6]U. S. A. Pat. 1, 738, 543.
[7]Am. Chem. Jour. 1913, pp. 50, 59.
[8]Brit. Pat. 206, 535.
[9]U. S. A. Geol. Survey Bul. 1911, 475.

TABLE 1

Fraction	*Spec. Grav./15°C.*	*Viscosity E°/50*	*Color*
1	0.8605	1.51	Colorless
2	0.8618	1.52	Colorless
3	0.8624	1.54	Colorless
4	0.8682	1.58	Yellow
5	0.8799	1.61	Yellow
6	0.8835	1.62	Yellow
7	0.8941	1.63	Citron Yellow
8	0.8995	1.65	Reddish
9	0.9023	1.65	Reddish
10	0.9046	1.65	Reddish

REFINERY BELT DRIVE PROBLEMS

By W. F. SCHAPHORST

A REFINERY belt drive problem was submitted to a power transmission engineer not long ago, regarding which he wrote the following letter. This letter is reproduced here because it contains a number of pointers that may prove of interest and value to other refiners:

"The crown on the pulleys is high and no doubt can be reduced to advantage. Crown is a good thing for keeping belts centered and for keeping them from running off the pulleys, but there is such a thing as too much crown.

"Also, if possible, avoid a speed as high as 6500 ft. per minute. When the belt speed exceeds 'a mile a minute' cast-iron pulleys become unsafe. Above 5280 ft. per minute the pulleys should be of steel or some equally safe material. It is not stated what these pulleys are.

"High speeds also are hard on belts. An instance recently was reported where even a very high grade leather belt could not stand up owing to the exceedingly high speed required, over small pulleys. Although that drive is not strictly comparable with this one, nevertheless it proves that a belt will not last as long when running at high speed as when running at lower speeds. Of course a great deal depends upon the nature of the load also. If the load is steady and non-fluctuating a belt may last a long while even at high speeds provided the pulleys are sufficiently large. The larger pulleys recommended for the proposed speed of 6500 ft. per minute are ample, but it is best to keep the speed at 4700 ft. if practicable.

"No doubt a wrapper pulley can be purchased for about the same amount of money that would be required for the two new pulleys suggested, and the overall efficiency of the drive would be higher than at 6500 ft. per minute without a wrapper pulley. If reducing the crown does not remove the difficulty a wrapper pulley should be used.

"There is no question but that a wrapper pulley will do the trick, but where possible try to get along without wrapper pulleys owing to the added first cost, the slightly lower efficiency, and the greater belt wear. Regardless of whether the belt is a bottom or top pull drive a wrapper pulley usually can be applied."

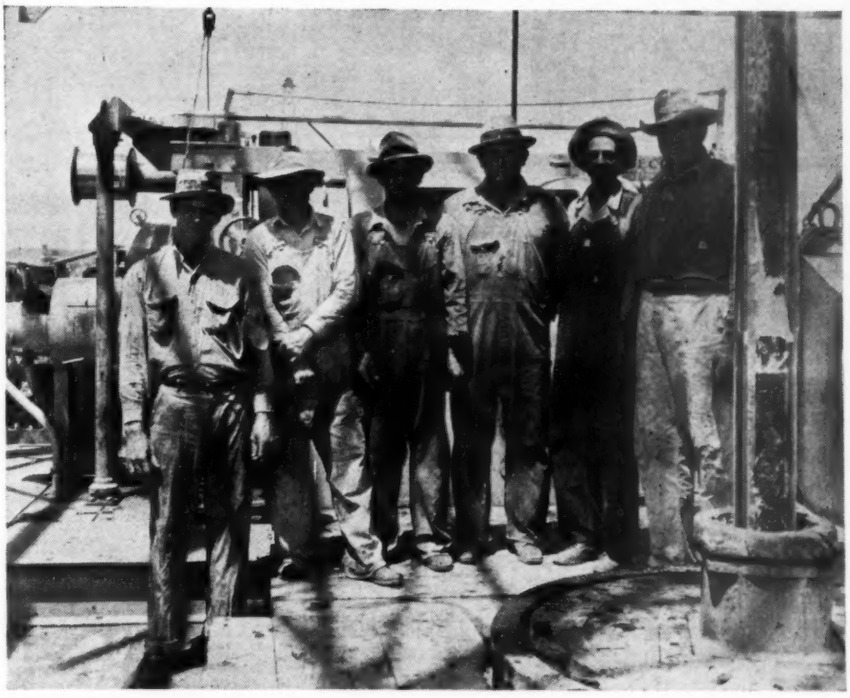
Record Performance by Drawworks in Evangeline Field

A record performance was made recently in the Evangeline field by an Ideco "Big Giant" drawworks owned and operated by the W. T. Burton Drilling Company of Sulphur, Louisiana. The crew pictured here, headed by H. R. Scales, driller, "broke out" and "set back" 37 thribbles (at 92 ft.) of 4½-in. O.D. drill stem in 29 minutes, using eight active lines. This is an average of one thribble every 47 seconds, and is claimed to be an all-time record.

The spooling drum on this drawworks is said to have the largest diameter of any on the market. Its size is one of the features pointed to by the manufacturers, who state it saves line, allows the line to spool more evenly, and permits high line speeds without racing the engine.

The remarkable performance of the "Big Giant" is a result of its fine construction and design, its manufacturers state, which includes double cut-tooth sprockets for the drum drives and engine drive, enclosed "pressure-spray" oiling system that provides perfect lubrication for the chain in sealed housings, water-cooled brake rims, self-energizing compound equalizing brakes with micro-sensitive feed-off characteristics and patented adjuster, alloy-steel shafts, and a rugged steel frame.

Additional Ideco equipment on the Burton rig included a 27-in. bobtail make-and-break rotary, "Super Duty" crown block and traveling block, line reel, derrick, and substructure.



Crew on Burton, Noble, Baker, Robira No. 1, Jennings, Louisiana. Left to right: A. Duhon, B. Leblanc, Joe Holloway, E. R. Scales, driller; S. T. D. Kimball, and G. Ledger

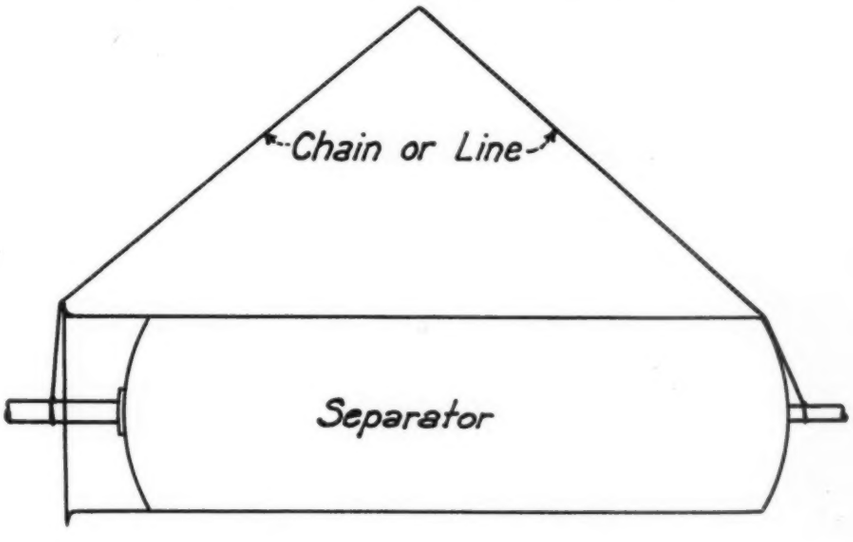
Moving Oil and Gas Separators

By W. J. GRISSETT[1]

WHEN a separator is to be moved a short distance, often it can be rolled if the usual motive power is not available or if it cannot be hauled because of soft ground, etc.

First, all protruding fittings are removed from the separator, and a short piece of pipe is screwed into the bleeder flange and one into the safety valve flange, assuming the flanges are near the center of the bottom and top of the separator. With the separator on its side, loop one end of a chain or wire line around each short piece of pipe; then fasten the other ends to a truck or a team. Inside thread protectors should be inserted in the tank flanges that are likely to be injured while moving. This means of moving separators when power facilities are limited, offers an easy solution of the problem.

Sometimes a windlass is invaluable for raising the separator after the location is reached. It consists of a substantial joint of pipe securely anchored, and a strong rope or wire line. The line is fastened to the separator or the A-frame, then wrapped several times around the pipe, which is rotated by one or more pairs of pipe tongs, a pair of back-up tongs being used to prevent the pipe windlass from turning in the reverse direction.



[1]Big Lake Oil Company, Texon, Texas.

Directory of Exhibits for Oil-World

Manufacturers of oil well equipment and supplies are continually making improvements in their products, hundreds of which will be on display at the Oil-World Exposition, and which are described briefly in this directory. Read this directory carefully and determine what exhibits will benefit you most. When you visit the Exposition in October go see them. Engineers will be on hand to explain and demonstrate the workings of all products, and you will find the displays eminently worthwhile

A

A-1 BIT COMPANY, INC.
Houston, Texas

Booths Nos. 652 and 654

EXHIBIT: Displaying drilling bits and wire-line coring equipment.

Representatives: C. L. Clausel, president and general manager; C. B. McDonald, vice-president; E. J. Robishaw, sales engineer; and other members of the sales personnel.

•

ABERCROMBIE PUMP COMPANY
Houston, Texas

Booths Nos. 606 and 707

EXHIBIT: On display will be Fluid-Piston slush pumps, low and high-pressure shear-relief valves, and a new pressure gauge.

Representatives: J. A. Tennant, Herbert Allen, Madden T. Works, and Burch Loggins.

•

AHLBERG BEARING COMPANY
Chicago, Illinois

Booth No. 348

EXHIBIT: Complete line of CJB ball bearings, together with special mountings.

Representatives: F. S. Barkdoll, Dallas, Texas, representative; and P. H. Staerk, in charge of pillow block sales at the Chicago factory.

•

THE AIRETOOL MFG. COMPANY
Springfield, Ohio

Booth No. 942

EXHIBIT: Displaying Airetool super power motors and Airetool self-feeding cutter heads.

J. A. ROWE, General Purchasing Agent, Humble Oil and Refining Company, Houston, Texas.

A. S. BAILEY, Vice-President and Asst. Mgr., The Texas Pipe Line Company, Houston, Texas.

Representatives: W. T. Hamilton, president; and L. D. Barnett, Jr., Houston representative.

•

AJAX WELL TOOL CORPORATION
Houston, Texas

Exhibiting with Houston Oil Field Material Company.

•

ALEXANDER ANDERSON, INC.
Fullerton, California

Exhibiting with the Lane-Wells Company.

•

ALLEN, SPROULL & ALLEN
Houston, Texas

Booths Nos. 234 and 236

EXHIBIT: Equipment of the following manufacturers will be displayed:

United States Gauge Company, New York City. Pressure gauge with pulsation damping attachment, also various pressure gauges for pipe line, field, and refinery use.

National Boiler Improvement Company, Washington, D. C. Copalite, for sealing pipe threads for high pressures and temperatures, and for sealing hand holes and man holes of high-pressure boilers. Rustinal, a coating resistant to gasoline, oils, hydrocarbons, alkalies, acids, ammonia, creosote fumes, and other liquids and gases. C. Gibson Ford, president, will be in charge of the exhibit.

Erie Tool Works, Erie, Pa. Pipemaster and pipe wrenches.

D. T. Williams Valve Company, Cincinnati, Ohio. Full line of bronze valves and oil cups.

M. & H. Valve & Fittings Company, Anniston, Alabama. Red Wheel gate valves and check valves.

Pressure Trap Valve Company, Houston, Texas. Plug type gate valve with Duprene pressure-trap seal (new).

Stanley G. Flagg & Co., Philadelphia, Pennsylvania. Furnace malleable pipe fittings, unions, foot valves, and cocks.

Kunkle Valve Company, Fort Wayne, Indiana. Pop valves and relief valves.

Exposition, Houston, Texas, Oct. 11-16

ALLSTEEL PRODUCTS MANUFACTURING COMPANY

Wichita, Kansas

Booth No. 1007 (Outside)

EXHIBIT: The Cardwell Allsteel Model R double-drum drawworks powered by Waukesha Gaku gasoline engine will be the main unit exhibited. This model is recommended by the manufacturer for rotary drilling from depths of 3000 ft. to 4000 ft., using 4½-in. drill pipe, dependent on size of prime mover. Spudding and beam assemblies are available or can be supplied for mounting in the field after purchase, if desired. With either of these assemblies, this double-drum drawworks makes a combination rotary and cable-tool drilling unit and conversion for use with either type of tools can be made in a short time, thereby eliminating cost and loss of time moving rotary equipment out and moving standard tool rig into the derrick.

Representatives: Arthur Harvey, Wichita, Kansas, sales manager; J. M. Crowe, Houston, Texas, representative; R. B. Gilmour, Dallas, Texas, representative; and M. T. Jordan, Shreveport, Louisiana, representative.

•

ALTEN'S FOUNDRY AND MACHINE WORKS

Lancaster, Ohio

Booth No. 1309

•

AMERICAN CABLE DIVISION OF AMERICAN CHAIN & CABLE CO., INC.

Wilkes-Barre, Pennsylvania

Booth No. 733

EXHIBIT: Wire rope as used in the oil industry.

Representatives: C. A. Perryman, R. D. McNutt, E. L. Klingler, J. L. Ragan, L. Glenn Moore, and S. W. Collins.

•

AMERICAN CHAIN & CABLE COMPANY, INC.

Bridgeport, Conn.

Booths Nos. 727, 729, 731, and 733

EXHIBIT: The following divisions of the company will display in these booths: American Cable Division, Reading-Pratt & Cady Division, Page Steel and Wire Division, American Chain Division, and Wright Manufacturing Division. For details of exhibits and representatives see listings under the various divisions. The Hazard Wire Rope Division of the company will have its display in Booth No. 150.

AMERICAN CHAIN DIVISION OF AMERICAN CHAIN & CABLE CO., INC.

Bridgeport, Connecticut

Booth No. 727

EXHIBIT: Samples of various chains as used in the oil fields.

•

AMERICAN HAMMERED PISTON RING CO. DIVISION OF KOPPERS COMPANY

Baltimore, Maryland

Booths Nos. 500 and 502

EXHIBIT: Latest type of piston rings with particular emphasis on the Cast Iron Bronze and Gold Seal rings.

Representatives: John A. Worthington, E. S. Freeman, Jr., Bart Aldridge, Daniel De-Butts, W. P. Cunningham, Harry Nolan, and J. M. Fuller.

HARRY L. EDWARDS, President, Harry L. Edwards Drilling Co., Houston, Texas.

B. M. NOWERY, General Supt. of Production, United Gas System, Houston, Texas.

•

AMERICAN IRON & MACHINE WORKS COMPANY

Oklahoma City, Oklahoma

Booths Nos. 336, 338, and 340

EXHIBIT: The following equipment will be exhibited: releasing and circulating overshots, wall hooks, milling shoes, paraffin bits, sucker rod coupling and paraffin scrapers, automatic catheads, pump release valves, pump manifold valves, expansion swivel joints, steam lubricators, float joints, casing suspenders, tubing supports, pump valves and seats, slush pump rocker arms, tapered taps, female die nipples, cone fishing sockets, flow packers, releasing and circulating spears, safety packing flanges, tie down companion flanges, boltless hose couplings, pumping well Christmas trees, milling tools, derrick substructures, engine foundations, steel tool houses, steel tool boxes, bug blowers, suction hoists, liner pullers, rear casing wagons, valve seat pullers, and valve seat vises.

Representatives: John F. Cailloux, president; Earl W. Miller, vice-president and treasurer; and John R. Riley, assistant secretary.

•

AMERICAN-LAFRANCE AND FOAMITE INDUSTRIES, INC.

Elmira, New York

Booths Nos. 744 and 746

EXHIBIT: Displaying a complete line of fire-extinguishing equipment, among which will be:

The Foamite Powder Bin Valve and Agitator Assembly, for use on dual powder storage bins in connection with dual powder foam production generators.

Foamite Applicator Type "D," to facilitate introduction of a foam stream into a burning vertical or horizontal tank that is not equipped with permanently installed foam chambers.

Type "S" Applicator, similar to Type "D" but of smaller capacity.

The latest in Foamite extinguishers, and a full line of Alfite (carbon dioxide) extinguishers.

Representatives: W. M. Price, sales engineering department; and D. D. Fitzgerald, Houston district manager.

•

AMERICAN MANUFACTURING COMPANY

St. Louis, Missouri

Booth No. 1217

Exhibiting with St. Louis Cordage Mills.

AMERICAN METER COMPANY

New York, New York

Booths Nos. 728 and 730

Exhibiting with Westcott & Greis, Inc.

•

AMERICAN OPTICAL COMPANY

Southbridge, Massachusetts

Booth No. 517

EXHIBIT: Complete line of head and eye protection equipment of interest to the oil industry. In addition, other optical products of interest to the general public as well as to oil men will be displayed.

Representatives: C. H. Gallaway, Walter G. Engel, and Robert A. Cox.

•

AMERICAN ROLLER BEARING COMPANY

Pittsburgh, Pennsylvania

Booth No. 151

EXHIBIT: Display of roller bearings for oil field service.

Representatives: C. F. Succop, president; C. L. Knaak, general manager; and E. D. Maltby, Pacific Coast manager.

•

AMERICAN SAND-BANUM COMPANY

New York, New York

Booth No. 232

EXHIBIT: Displaying Sand-Banum, a colloidal concentrate that the manufacturers state eliminates all scale and corrosion formation in boilers by holding all water impurities in suspension. Also, Sand-Banum Blue Seal Emulsion, which does the same for the cooling systems of internal combustion engines that Sand-Banum Standard does for boilers.

Representatives: L. Bradie, New York, secretary and treasurer; Frank J. Welu, division manager of Western Sand-Banum Company; Paul P. Elliott, West Texas representative; and A. J. Maxwell, Gulf Coast representative.

•

AMERICAN STEEL & WIRE COMPANY

Chicago, Illinois

Exhibiting in the United States Steel Corporation section.

•

APPLETON ELECTRIC COMPANY

Chicago, Illinois

Booths Nos. 736 and 738

EXHIBIT: Complete line of Unilets, including Unilets for installations in ordinary locations, as well as installations in hazardous locations. The feature of the exhibit will be explosion-proof Unilets, such as junction boxes, dead-end plugs and receptacles, lighting fixtures, circuit breakers, switches, panel boards, and automatic take-up reels for electric current.

Representatives: F. W. Wehrheim, assistant sales manager, and Hollis R. Johnson, district representative.

C. L. WOOD, General Manager, Houston Pipe Line Company, Houston, Texas.

W. M. GRIFFITH, Vice-Pres. and General Mgr., Plymouth Oil Company, Sinton, Texas.

S. M. STANLEY, Purchasing Agent, Pan American Production Company, Houston, Texas

•

ARROW-HART & HEGEMAN ELECTRIC COMPANY

Hartford, Connecticut

Booth No. 14

EXHIBIT: Display of magnetic switches, motor controls, and electric wiring devices.

Representatives: Wynne Snoots, Southwestern District manager, and Selwyn W. Sharbrough, South Texas sales representative.

•

ATLAS ENGINEERING WORKS

Houston, Texas

Booths Nos. 424, 525, and 527

EXHIBIT: The following equipment will be displayed: high-pressure all-steel tubing and braden heads, assembled Christmas trees, high-pressure forged-steel fittings, adjustable flow chokes, adapter flanges, hydraulic liner and valve seat puller, seal rings, clamps and tie rods, flange unions, and forged flanges.

Representatives: E. L. Barker, C. M. Whitehead, J. R. Barrett, Wallace Carter, C. P. Gillespie, G. D. Hunter, W. V. Currie, and Jack Garrison.

•

AUSTIN TRAILER EQUIPMENT COMPANY

Muskegon, Michigan

Exhibiting with Transportation Equipment Company.

•

AXELSON MANUFACTURING COMPANY

Los Angeles, California

Exhibiting with Frick-Reid Supply Corporation.

•

AYRES ENGINEERING COMPANY

Houston, Texas

Booths Nos. 409 and 411

EXHIBIT: Durametallic Corporation metallic packing; and Coen Company, Inc., burners and metallizing equipment.

B

BAASH-ROSS TOOL COMPANY

Los Angeles, California

Booths Nos. 1037 and 1038 (outside)

EXHIBIT: Equipment on display will include cutters for internal casing and external drill pipe, long knife and star wheel perforators, rotary jar, rotary releasing spear, rotary releasing socket, safety joint, drill collar, upset kelly, self-aligning rotary slip, tubing spider, liner hanger, flow bean, oil saver, and float valve.

Representatives: W. E. Bendeler and H. J. Craig.

•

J. T. BAKER CHEMICAL COMPANY

Phillipsburg, New Jersey

Exhibiting with W. H. Curtin & Co.

•

BAKER OIL TOOLS, INC.

Huntington Park, California

Booths Nos. 100 and 103

EXHIBIT: Models of the Baker cementing equipment for guiding, floating, and cementing casing. Also, the Baker Whirler Cementing Collar with the new petal basket that differs from the canvas basket as it is made from a number of brass vanes so designed that they collapse evenly into the casing into which the basket is being run. This basket generally is used in conjunction when cementing through perforations, and is placed below the perforations through which the cement is to pass, thus preventing the cement from being forced into the formation below the cementing point.

The Baker portable hydraulic kelly and pipe straightener will be on display also. This device makes it possible to straighten a kelly or pipe hanging on the traveling block in vertical position through the rotary table, and eliminates the necessity of taking the kelly or the pipe to the shop for straightening. The straightener can be used in horizontal as well as vertical position.

The new Baker Bakwik Drill Pipe Float is another item of equipment that will be on exhibit. The float assemblies are of the slip type, have no threads, and easily can be dropped into place and removed without the assistance of special tools or wrenches. A full size cutaway model of the Baker Cement Retainer, showing the construction and practicability of the tool, will be on display. Additional equipment displayed will be the Baker Rotary Hydraulic Expansion Wall Scraper and Wall Sampler, and a new wash down casing shoe of novel design.

Representatives: C. E. Burt, chief engineer, Huntington Park, California; W. A. Davis, Houston district manager, Houston, Texas; W. E. Routt, sales engineer; W. H. Griffin, sales engineer; and C. E. Whitney.

LAURENCE H. FAVROT, President, Latex Construction Company, Houston, Texas.

S. H. HARPER, Division Purchasing Agent, Pure Oil Company, Houston, Texas.

R. G. BECHTEL, Division Superintendent, Stanolind Oil and Gas Company, Houston, Texas.

BALDWIN-DUCKWORTH CHAIN CORPORATION

Springfield, Massachusetts

Booths Nos. 314 and 316

EXHIBIT: A new solid cotter chain for rotary drilling. The company recently obtained a patent covering this new pin locking device. Also on display will be their full flexible coupling, and a complete line of roller chains in single and compound widths.

Representatives: The exhibit will be in charge of Geo. J. Fix, Sr., and the following will be in attendance: F. J. Weschler, general manager and treasurer; Geo. D. Gilbert, sales manager; E. L. Parsons, assistant sales manager; Hermann Klaucke, chief engineer; Geo. J. Fix, Jr.; T. H. Lankford; J. N. Martin; and F. F. Jones.

•

BARBER-GREENE COMPANY

Aurora, Illinois

Booth No. 1018

EXHIBIT: The 1937 Barber-Greene Pipe-Line Special Ditcher and the Utility Special Ditcher with the offset vertical boom.

Representatives: E. H. Cooper, in charge, assisted by members of the Cochran Equipment Company, Barber-Greene representatives in Houston.

•

BARCO MANUFACTURING COMPANY

Chicago, Illinois

Exhibiting with M. N. Dannenbaum Company.

•

BAROID SALES COMPANY

Los Angeles, California

Booths Nos. 323, 325, and 327

EXHIBIT: Samples of Baroid and other products distributed, and models of laboratory equipment used in making drilling mud tests for the purpose of evaluating the mud.

Representatives: Geo. L. Ratcliffe, general manager of the Baroid sales department, will be in charge, assisted by H. H. Farnham, D. A. Sikes, R. W. Wilson, J. W. O'Brien, George Bloxsom, F. O. Palmer, Morgan Daly, and George Moore.

•

BARTLETT HAYWARD DIVISION OF KOPPERS COMPANY

Baltimore, Maryland

Booths Nos. 501 and 502

EXHIBIT: Complete display of Fast Flexible Couplings.

Representatives: John A. Worthington, J. M. Fuller, E. S. Freeman, Jr., Bart Aldridge, Daniel DeButts, W. P. Cunningham, and Harry Nolan.

BEARD & STONE ELECTRIC COMPANY

Houston, Texas

Booth No. 157

EXHIBIT: Delco-Lite plants, water pumps, and batteries. Mr. Jones and a factory representative, Mr. Wyatt, will have charge of the exhibit. In addition they will cooperate with several other manufacturers, for whom they are Southwest representatives, in their exhibits, as follows:

Bosch will exhibit their magneto and Diesel injector lines in Booth No. 155 and in addition to their Mr. Hadden, Mr. Krommes of Beard & Stone will be in the booth.

The Wico Magneto Corporation will show their magneto line in Booth No. 700 and Lee Traweek of Beard & Stone will assist Leon Smith. The latter is district representative for Wico in the Southwest.

The Bendix Corporation will exhibit in Booth No. 13 and Mr. Inglis of Beard & Stone will be in the booth, along with a factory representative of Bendix.

•

BEAUMONT IRON WORKS

Beaumont, Texas

Exhibiting with Frick-Reid Supply Corporation.

•

BEAVER PIPE TOOLS, INC.

Warren, Ohio

Booth No. 756

EXHIBIT: The Model-A Pipe Machine, a portable unit for cutting and threading pipe and bolts, will be the featured equipment on display. In addition all the important hand tools used in the oil fields will be on exhibit and demonstrated. The modernized Beaver line consists of 35 new and 18 improved tools and machines.

Representatives: C. W. Smith, Dallas, Texas, oil field district manager, will be in charge, assisted by Harris Carlock, Atlanta, Georgia, Southern District manager.

•

CHRISTIAN BECKER, INC.

New York, New York

Exhibiting with W. H. Curtin & Co.

•

BENDIX PRODUCTS CORPORATION

South Bend, Indiana

Exhibiting with Transportation Equipment Company.

•

BENJAMIN ELECTRIC MANUFACTURING COMPANY

Des Plaines, Illinois

Booths Nos. 224 and 226

•

BETHLEHEM STEEL COMPANY, INC.

Booths Nos. 548, 550, 552, 554, and 556

EXHIBIT: Various types of line pipe and casing, with test specimens from crush tests and welds; sucker rods; a complete line of bolts, studs, and nuts, plain and alloyed; high-pressure screws for return bends; stainless-steel thermo-wells; derrick and tank bolts, plain and galvanized; tool joint forgings; pump liners; roller bits; alloy steels in as-rolled, cold drawn, ground, polished, and planished form; Bethanized strand fence, nails, and other wire products; galvanized sheets and roofing; tin plate and terne plate for oil cans and containers. Transparencies on forging and pipe manufacture and murals depicting operations in the production of alloy steel will be displayed prominently.

R. E. JOHNSON, Purchasing Agent, Plymouth Oil Company, Houston, Texas.

F. J. McMAHON, Vice-President and Supt. of Operations, The Texas Pipe Line Company, Houston, Texas.

C. F. RUSS, Chief Clerk, Gulf Oil Corporation, Texas Division, Houston, Texas.

•

BETTIS RUBBER COMPANY, LTD.

Los Angeles, California

Exhibiting with Gulf Engineers, Inc.

•

BIG THREE WELDING EQUIPMENT COMPANY

Houston, Texas

Booths Nos. 735, 737, and 739

EXHIBIT: Late developments of arc-welding dressing of oil field drilling bits will be shown, utilizing welding machines and materials manufactured by the Lincoln Electric Company. Lincoln Arc welders and general supplies will be displayed. Actual arc welding will be carried on in the booth. Suitable glasses through which interested persons can watch the welding will be inserted in the sides of this booth.

One of the objects of the display will be to show how oil field drilling bits can be cut, washed, and built up to gauge size and hard faced solely with the electric arc and proper rods and material. It is claimed that this new method will represent to its users a 55 percent saving in material and give them a bit that will actually dig more hole.

Osage Metal Company of Oklahoma City, Oklahoma, and the Corpus Christi Oxygen Company, Corpus Christi, Texas, will display with the Big Three Welding Equipment Company and their products will be on exhibit.

Representatives: Bill Likins, president and owner, Osage Metal Company; Burk Denney of the Big Three Welding Equipment Company; and Barney David, of the Corpus Christi Oxygen Company.

•

BILLINGS & SPENCER COMPANY

Hartford, Connecticut

Exhibiting with Oster Manufacturing Company.

•

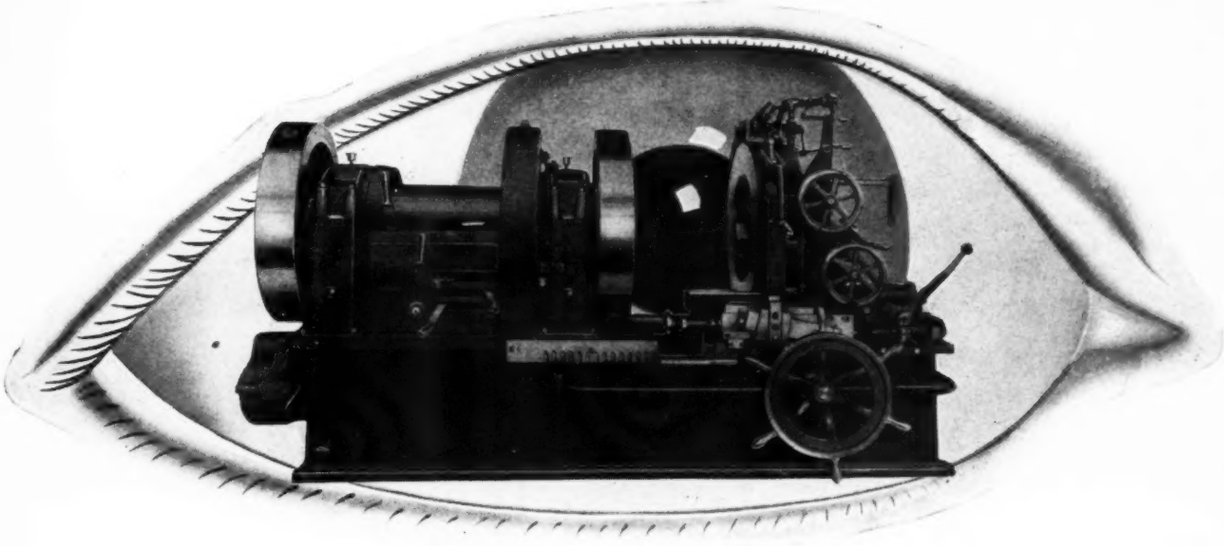
BLACK, SIVALLS & BRYSON, INC.

Oklahoma City, Oklahoma

Booths Nos. 450, 452, 454, and 456

EXHIBIT: Full size BS&B high duty separator in operation with full pilot controlled BS&B oil valve equipment and automatic feeder. Also, an extraordinarily high-pres-

The Eyes of the Oil World Should SEE



. . . the most complete display of modern THREAD CUTTING EQUIPMENT

SEE The LANDIS Receding Chaser Machine for cutting threads more accurately and more economically on Casing, Tubing and Drill Pipe

SEE The LANDMACO Threading Machine . . a machine of greater accuracy and higher production possibilities for threading bolts, rods, etc.

Both the Receding Chaser Pipe Machine and the LANDMACO Machine will be in actual operation.

HOUSTON OCTOBER 11-16-1937 SEE OUR EXHIBIT OIL WORLD EXPOSITION

SEE The display of our complete line of Die Heads and Collapsible Taps for all threading operations.

THE OIL WORLD EXPOSITION
Booth Numbers 551-553-555

LANDIS MACHINE CO., Inc.
WAYNESBORO, PENNSYLVANIA

sure separator — the company's 3000-lb. strictly A.P.I.-A.S.M.E. Code separator—having the top head removed in order that visitors may realize the extreme thickness of shell and head material. Other equipment exhibited will be: tubular oil heater, oil meter, oil sampler, tank thief valves, blow case, and safety head.

Representatives: A. J. Edwards, G. E. Peoples, G. Raymond, R. E. Stevens, and G. C. Parmlee.

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BLAW-KNOX COMPANY

Pittsburgh, Pennsylvania

Exhibiting with Frick-Reid Supply Corporation.

•

J. E. BOBO

Houston, Texas

Booths Nos. 533 and 535

EXHIBIT: Products of the following manufacturers will be displayed:

Thos. Devlin Manufacturing Company, Burlington, New Jersey, pipe fittings.

Marshalltown Manufacturing Company, Marshalltown, Iowa, pressure gauges.

Dixon Valve and Coupling Company, Philadelphia, Pennsylvania, hose couplings.

Goodall Semi-Metallic Hose and Manufacturing Company, Philadelphia, Pennsylvania, rotary hose.

Representative: J. E. Bobo.

•

BRANCE-KRACHY COMPANY

Houston, Texas

Booths Nos. 1122, 1124, 1223, and 1225

EXHIBIT: Wind-driven generators for use in cathodic protection of pipe lines.

•

BRODERICK & BASCOM ROPE COMPANY

St. Louis, Missouri

Exhibiting with Continental Supply Company.

•

BROWN-HOVIS, INC.

Houston, Texas

Booths Nos. 1104, and 1106

•

THE BROWN INSTRUMENT COMPANY

Philadelphia, Pennsylvania

Booth No. 734

EXHIBIT: Several entirely new refining process control instruments will be demonstrated. These instruments—indicating, recording, controlling — will be in actual operation and consist of the following:

PAUL KAYSER, President, El Paso Gas Co., Houston, Texas.

J. O. McPHERSON, Assistant General Supt., Sun Oil Company, Houston, Texas.

O. A. SAMPSON, Assistant Purchasing Agent, Republic Production Co., Houston, Texas.

Brown Pneumatic Control Transmission System—Temperature, pressure, flow and liquid level measurements may be indicated, recorded, and controlled remotely from the point of measurement by this new, exclusive pneumatic telemetering system. Particularly applicable to hazardous locations where the use of electricity is to be avoided.

Brown Pneumatic Interlock Control System—A system wherein one medium may be controlled in response to variations in another. The control index of a flow controller, for example, may be positioned automatically from a liquid level recorder.

Brown Air-Operated Controller with Safety Cut-Off Switch—The switch may be set to give a signal or alarm, or to stop and start motors, etc., when a predetermined value on the chart is reached. Switch has a capacity of 10 amp. at 110 volts.

Brown Multiple Recording and Controlling Numeral Printing Potentiometer—Where it is desirable to record several temperatures on one chart this instrument will not only record but it also will control from two to six temperatures from as many different thermocouples. There are three other outstanding exclusive features: 1. The chart drum is made of steel with a vulcanized rubber cover, as used on typewriters. 2. It is said by the makers to be the only printing recorder using specially hardened steel print wheel with machine cut numerals. Both of these features assure maximum legibility of chart records. 3. The + sign is used for recording temperatures. It has special significance, namely, the vertical line of the + sign identifies the temperature and the horizontal line is the time coordinate.

In addition to the above new instruments, the following standard Brown instruments, featuring such improvements as simplified design, additional ruggedness of construction, will be in operation:

Brown Air-o-Line Control System—Coordinates temperatures, pressures, flows, and liquid levels.

Brown Flow Meters—Electrical, mechanical, and area.

Brown Resistance Thermometers—For measuring, indicating, recording, and controlling temperatures.

Brown Manually Balanced Potentiometer — An indicating manually-balanced potentiometer in a large switch cabinet for supervisory temperature measurements.

Representatives: L. Morton Morley, Philadelphia, vice-president and general sales manager; H. M. Schmitt, Philadelphia; R. L. Mallory, Houston; R. P Walker, Tulsa; G. S. Younkin, Dallas; F. M. Poole, Dallas, and O. B. Wilson, Chicago.

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BROWN OIL TOOL COMPANY

Houston, Texas

Booths Nos. 1104 and 1106

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BROWNING-FERRIS MACHINERY COMPANY

Dallas, Texas

Booths Nos. 1024, 1025, 1026, and 1027 (Outside)

EXHIBIT: On display will be the International Harvester Company's latest type

(*Continued on Page 79*)

(*Continued from Page 74*)

trucks completely equipped with the necessary items for oil field use, as well as some smaller units for the commercial field. As representatives of International and Industrial tractors, Browning-Ferris will have on exhibit a complete line of International power units, and International tractors, both gas and Diesel. In addition to their regular International line they will display concrete mixers, pumps, draglines, side boom tractors for pipe line work, Ingersoll-Rand air compressors, and Galion graders and maintainers.

Representatives: From Browning-Ferris Machinery Co.: G. M. Deane, J. W. Chumley, and H. L. Burleson. From International Harvester Company: Walter Weathers, E. A. Morris, Gary Gillis, R. L. Adams, A. D. Howard, and A. P. Reitz. In addition there will be factory representatives from the various companies for which Browning-Ferris is distributors, as follows: C. E. McLain, Thew Shovel Company; V. Mandt, Jaeger Machine Company; I. Kunert, Trackson Company; J. E. Morton, Galion Iron Works and Manufacturing Co.; H. M. Jameson, Bucyrus-Erie Company (Tractor Division); and Fred Sultan, Ingersoll-Rand Company.

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BUCKEYE TRACTION DITCHER COMPANY

Findlay, Ohio

Booth No. 1010 (outside)

EXHIBIT: On display will be the Model 12 ditcher, the new Model 50 Clipper dragline, and the Model 49 ditcher. The latter is new and will be shown for the first time.

Representatives: W. H. Schomberg, general manager; G. C. Swartz, district manager; E. R. Curry, salesman; and Cliff Kelley, demonstrator.

•

E. D. BULLARD COMPANY

San Francisco, California

Booth No. 638

EXHIBIT: Featuring the new Bullard Hard Boiled Tuff Nut hats and caps, Wheat lamps, Willson goggles and respirators, and Bullard first aid kits and refills. The exhibit will be built around a central moving display showing workman entering the Bullard organization and again leaving the Bullard organization fully equipped with the necessary personal safety equipment. This moving exhibit will be set up against a background portraying general production and refining processes.

Representatives: J. J. Delahide, Houston, Texas, Mid-Continent supervisor of all Bullard activities.

•

BULL-STEWART EQUIPMENT COMPANY

Dallas, Texas

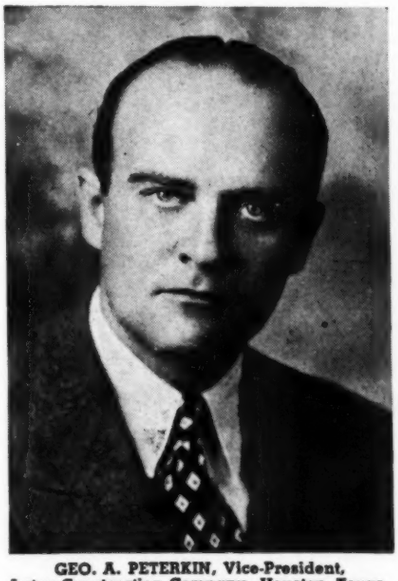
Booth No. 1022-B (outside)

EXHIBIT: Principal equipment displayed will be special truck equipment adaptable to oil field conditions, such as Thornton four-wheel drive units; Eaton-Ruckstell special two-speed axles; Braden truck and tractor winches; Wickwire-Spencer wire rope; Fiegelson oil field trailers; V-8 Ford industrial power units; and various other items.

Representatives: Victor Reed, Henry Traylor, Van Fisher, Sewell King, and others.

R. W. SHAW, Purchasing Agent, Rio Bravo Oil Company, Houston, Texas.

J. L. CULBERTSON, Chief Engineer, The Texas Pipe Line Company, Houston, Texas.



GEO. A. PETERKIN, Vice-President, Latex Construction Company, Houston, Texas.

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BYRON JACKSON COMPANY

Los Angeles, California

Booths Nos. 649, 651, 653, 655, and 657

EXHIBIT: Equipment shown will be that listed in the BJ Oil Tool Catalog, as well as several items manufactured by the Pump Division, consisting of various types of centrifugal pumps.

Representatives: E. S. Dulin, president. Oil Tool Division: Frank Champion, C. F. Vincent, R. T. Todd, E. W. Stuart, G. Nicolson, and M. Moore. Pump Division: Lynn Sawyer, E. W. Baker, J. J. Progress, and J. J. O'Connor, Jr.

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C

CAMERON IRON WORKS, INC.

Houston, Texas

Booths Nos. 604 and 705

EXHIBIT: Products to be exhibited are: (1) Cameron pressure-operated blowout preventers, 3000-lb. and 6000-lb. test; (2) Cameron pressure-operated gate valves, 3000-lb. and 6000-lb. test; (3) Cameron drilling control hook-ups; (4) Cameron manually-operated blowout preventers, double screw model, 3000-lb., 6000-lb., and 10000-lb. test; (5) Cameron manually-operated blowout preventers, single screw model, 6000 and 10000-lb. test; (6) Cameron resilient seal gate valves, 8000-lb. test; (7) Cameron safety Christmas trees, several types; (8) Cameron "Old Ocean" Type, long-string braden head; (9) Cameron rotary core barrels; (10) Cameron master control tubing heads; (11) Cameron re-setting tubing plugs; (12) Cameron wire-line core barrel blowout preventer; and (13) Cameron expansion tube flow choke.

Representatives: E. L. Lorehn, L. D. Hilton, A. V. Bland, W. P. (Red) Knight, J. M. (Red) Teague, Harley Guedry, O. V. Parker, and Paul T. Putnam.

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CARNEGIE-ILLINOIS STEEL CORPORATION

Chicago, Illinois

Exhibiting in United States Steel Corporation section.

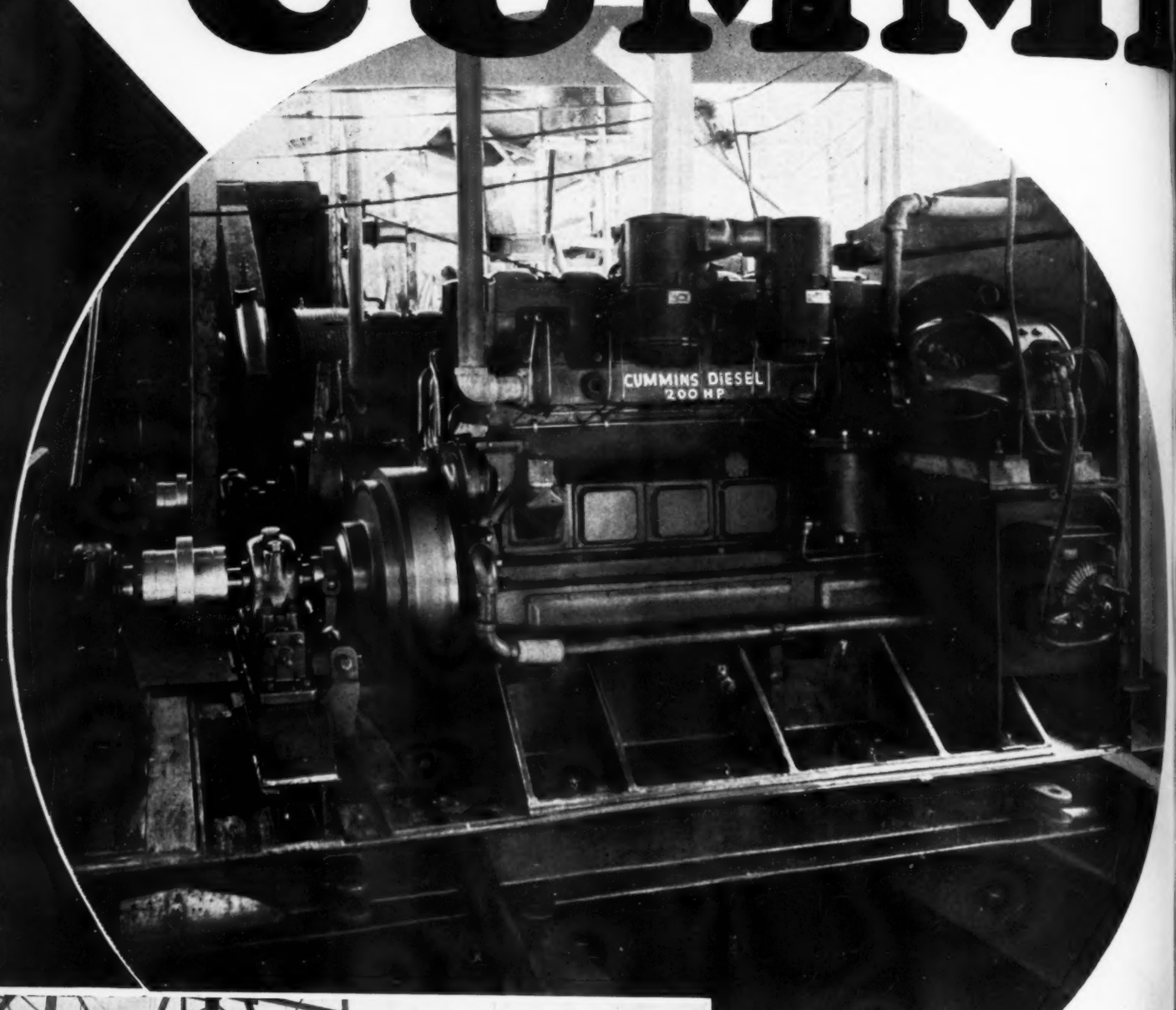
•

CARLYLE RUBBER COMPANY

New York, New York

Booth No. 1118 (tent)

CUMMI



NS The DEPENDABLE DIESEL POWER

Gives you what you want on any Power Job!

Cold Starting - No Warming Up Period

Quick Acceleration and Flexibility

Smooth Powerful Operation

Dependable Perfomance

Low Maintenance and Long Life

MID-CONTINENT SUPPLY CO.

REFINERY · PIPE LINE · OIL & GAS WELL SUPPLIES

General Offices Mid-Continent Bldg.. Fort Worth, Texas

CATERPILLAR TRACTOR COMPANY

Peoria, Illinois

Booths Nos. 1040-A and 1041-A (outside)

EXHIBIT: Each of the seven sizes of Diesel engines manufactured by the company will be on display.

Representatives: H. H. Howard, Horace W. Smith, George P. Fenn, J. S. Drummond, and Harry Vines, all of the Engine Sales Division, Caterpillar Tractor Company.

•

CHAIN BELT COMPANY

Milwaukee, Wisconsin

Booths Nos. 513 and 515

EXHIBIT: Display will consist of Rex oil field chains and sprockets. These chains will be exhibited in all the different styles and sizes manufactured by the company. Included among these chains are two new lines of chains for the oil fields, made along the same principles as our other chains. Foremost among these two new chains is Rex Champion No. 3 and No. 4. This Champion chain is made along the same principles of precision and highly finished surfaces, as Deepwell, and Rex Deepwell chain has always been made in order to stand up under modern, high-speed drilling. Rex Champion chain is a heavier chain having higher ultimate strength. The side bars on the Rex Champion No. 4 are forged from alloy steel. This chain is recommended for extremely hard and deep drilling where excessive loads in the final stages of the deepest holes are the main factors. Rex Champion No. 3 has an ultimate strength of 75,000 lb., and Rex Champion No. 4 an ultimate strength of 170,000 pounds. Another new chain is Rex Universal No. 3125 in single or double strands, which is for the highest speed drilling. This is also made with the same principle as Rex Deepwell and Rex Champion but has a substantially shortened pitch in order to take much higher drilling speeds and heavier loads. Naturally, Rex Deepwell and Rex Standard Chabelco made in A. P. I. 3 and 4 sizes will be shown as part of the exhibit. Rex Roller chains built with the same high strength that distinguishes all Rex rotary drilling chains also will be shown in the various sizes used in the oil fields. Both the actual product and the pictures of the product in action will be shown in the booth.

Representatives: Mr. Snavely, Houston representative; Mr. Pitts, Oklahoma City representative; Mr. Jewett, chief engineer; Brinton Welser; Mr. Abelt; and Mr. Davis.

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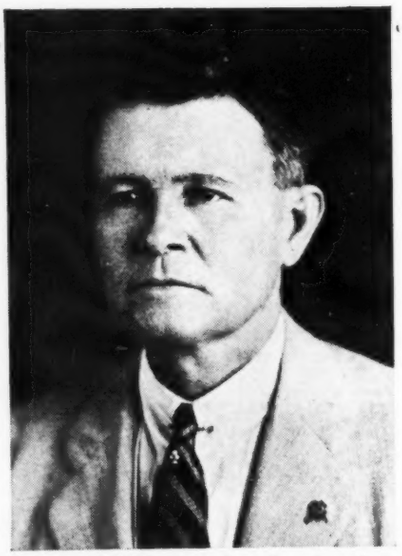
CHAMPION RIVET COMPANY

Cleveland, Ohio

Booths Nos. 934, 936, and 938

EXHIBIT: Samples of the company's complete line of upset products, principally rivets, will be displayed, as well as electric welding rods.

Representative: Thos. J. Kegg, Houston, Texas, district representative.



A. L. BRADFORD, Asst. Gen. Superintendent, Pipe Lines, United Gas System, Houston, Texas.

J. H. KIRBY II, C & K Drilling Company, Houston, Texas.

G. L. NYE, Production Engineer, Tide Water Associated Oil Co., Houston, Texas.

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CHAPLIN-FULTON MANUFACTURING COMPANY

Pittsburgh, Pennsylvania

Exhibiting with Westcott & Greis.

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CHASE BRASS & COPPER COMPANY

Waterbury, Connecticut

Booths Nos. 634 and 636

EXHIBIT: Display is in conjunction with Standard Brass and Manufacturing Company, Port Arthur, Texas. Main features of the exhibit will be Chase condenser tube alloys for all oil refinery heat exchangers and condensers. These alloys are Admiralty, Red Brass, and Antimonial Admiralty. Also featured will be Chase Laboratory Service, in which will be offered the services of Chase engineers to make case studies of tube corrosion problems in specific plants, together with tube alloy recommendations. Complete stocks of condenser tube alloys ready for immediate shipment will be on display.

Representatives: For Chase Brass and Copper Company: Mr. Berry; W. E. Evans, manager of New Orleans warehouse; and N. W. Mitchell, Chase research engineer.

For Standard Brass and Manufacturing Company: Harry LeBlanc and George Boane.

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CHIKSAN OIL TOOL COMPANY, LTD.

Fullerton, California

Exhibiting with Gulf Engineers, Inc.

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CLEVELAND TRENCHER COMPANY

Cleveland, Ohio

Booth No. 1020 (outside)

EXHIBIT: Displaying the company's complete line of ditching equipment.

Representatives: V. S. Penote, J. A. Penote, J. R. Overs, and H. Q. Hollmann.

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CLIMAX ENGINEERING COMPANY

Clinton, Iowa

Exhibiting with the Continental Supply Company.

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COAST OILFIELDS SUPPLY COMPANY

Los Angeles, California

Exhibiting with W-K-M Company.

(*Continued on Page 86*)

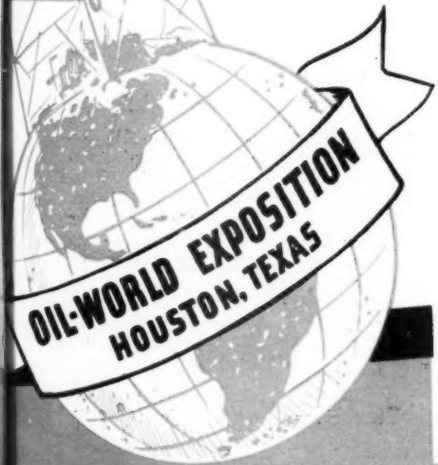
Gather . . .
IS REPRESENTED

ASSOCIATED EXHIBITORS

BRODERICK AND BASCOM ROPE COMPANY
CLIMAX ENGINEERING COMPANY
D + B PUMP AND SUPPLY COMPANY
EMSCO DERRICK AND EQUIPMENT COMPANY
FAIRBANKS, MORSE & COMPANY
» » THE FALK CORPORATION « «
GARDNER-DENVER COMPANY
MECHANICAL RUBBER COMPANY
NEW BEDFORD CORDAGE COMPANY
» WESTCOTT VALVE COMPANY «
YOUNGSTOWN SHEET AND TUBE COMPANY
YOUNGSTOWN STEEL PRODUCTS COMPANY

» BOOTHS «

328, 330, 332, 334, 428, 429, 430, 431, 433, 435



THE CONTINENTAL SUPPLY COMPANY

General Offices: DALLAS, TEXAS

Export Office: CONTINENTAL EMSCO CO., Inc.
30 Rockefeller Plaza New York City, N. Y.

Representatives:
LONDON MARACAIBO PLOESTI BUENOS AIRES

(*Continued from Page 82*)

COEN COMPANY, INC.

San Francisco, California

Booth No. 411

EXHIBIT: Burners and metallizing equipment.

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COLUMBIAN STEEL TANK COMPANY

Kansas City, Missouri

Exhibiting with Transportation Equipment Company.

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COMMERCIAL IRON WORKS

Los Angeles, California

Exhibiting with Maintenance Engineering Corporation.

•

CONTINENTAL SUPPLY COMPANY

Dallas, Texas

Booths Nos. 328, 330, 332, 334, 428, 429, 430, 431, 433, and 435

Under the auspices of The Continental Supply Company, a wide assortment of drilling and production equipment produced by affiliated manufacturing companies will be shown at the Oil-World Exposition.

Among the officials and sales representatives scheduled to attend the Exposition as exhibit hosts are W. J. Morris, president; F. M. Mayer, vice-president; F. I. Brinegar, vice-president; C. H. Meyer, manager of sales; N. A. Endicott, assistant manager of sales; H. E. Spencer, director of purchases; A. J. Olson, chief engineer; John C. Slonneger, assistant chief engineer; and Chas. W. King, manager of tubular sales.

Occupying a chain of booths on Aisles 2 and 3 of the Exposition Hall, individual booths will quarter the exhibits of the respective associated manufacturing companies as follows:

GARDNER-DENVER COMPANY:

Affording visitors the opportunity to view the latest design in steam drilling engines, the recently announced 9½ by 8 Gardner-Denver Vertical model will be on display. The engine is equipped with a manually adjustable cut-off, easily set to meet load requirements. Steam valves are of the inside admission piston-valve type—light, perfectly balanced, and easy to reverse. Valves in this engine are tight under high pressures and with super-heated steam, while the steam cylinders are insulated with mineral wool covered with sheet rock.

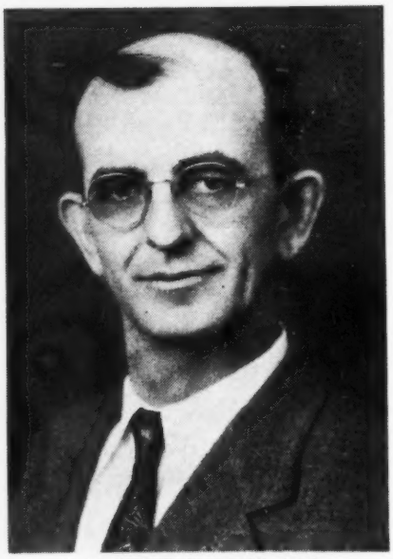
Exceptionally compact and economical this unit is particularly desirable for driving a slush pump by means of V-belts, flat belt or chain drive, and also is adaptable for driving the rotary table directly.

On display in Booth No. 429, company representatives in charge of the Gardner-Denver exhibit are E. F. Schaefer, vice-president; R. J. Bauer, district manager, together with R. J. McFarland.

FAIRBANKS, MORSE AND COMPANY:

Here, a three-cylinder, 2-cycle, 6 by 6½ Model 34 vertical engine will be exhibited in Booth No. 431. Especially designed for pumping service, the essential moving parts of this engine are identical with those of a proved design in long industrial use.

W. V. HEWITT, Assistant Superintendent, Pan American Production Co., Houston, Texas.



J. W. HOLTZ, Master Mechanic, Humble Pipe Line Company, Houston, Texas.

C. N. HOUSH, President, Housh, Schofield and Thompson Drilling Company, Houston, Texas.

Outstanding features of this engine include heavy pistons for dissipating heat; heavy crankshafts, perfectly counterbalanced; and heavy flywheels to provide unusually smooth operation. Design of the governor permits variation of the degree of sensitivity, a highly desirable quality in oilfield service. Of especial note concerning this engine is its freedom from vibration.

Welcoming visitors at the Fairbanks, Morse and Company exhibit will be H. J. Renken, manager oil field division; F. G. Grutzner, engineer; Harold Gobble and F. D. Ratcliffe, representatives.

FALK CORPORATION:

Occupying a prominent spot in the Continental exhibit will be the Falk 60-CD Gear Unit, representing a line of double reduction units. Symmetrically designed and of sturdy construction, it is also equipped with double low-speed bearings on both sides. This unit is adaptable for single or twin-crank portable pumping equipment, or either back cranking or service sprocket.

Herringbone type gears in this unit were pioneered by Falk, cut on special machines designed and used exclusively by Falk. Double-end high and low-speed shafts afford especial advantage, permitting assembly of the brake or pulley on either side of the high-speed shaft. The Falk trough system of lubrication insures an unfailing supply of clean lubricant to all bearings, while special oil retainers prevent any leakage of oil and seals the lubricant against the admission of dirt and dust particles. Ratio of the Falk 60-CD Unit is 29.8:1, having a peak torque capacity of 100,000 in-lb. at 20 s.p.m.

Exhibited in Booth No. 433, Falk officials in charge will be E. P. Connell, vice-president; T. F. Scannell, district manager; and W. L. Schneider.

CLIMAX ENGINEERING COMPANY:

Adjacent to the above-described exhibit and occupying Booth No. 435 will be the model N4B 4-cylinder Climax "Blue Streak" engine. Bore and stroke of this engine is 5¾ by 6½, with valve-in-head design open-box base type for natural gas operation. An extra heavy fly-wheel makes this engine especially desirable for oilfield pumping service. Its water-cooled exhaust manifold, vapor-proof ignition, safety-devices, oil-filter, and oil-bath type air cleaner are a few of this engine's outstanding features. Full particulars concerning this equipment will be given by E. D. West, sales manager, and T. L. Keeling, district manager in charge of the exhibit.

EMSCO DERRICK AND EQUIPMENT COMPANY:

Certain to attract the attention of every visitor in the Exposition Hall will be the newly-designed Emsco Type JA-20½ Rotary Machine. This is a small opening machine (20½ in.) permitting the load-bearing to be reduced in diameter, thereby affording higher rotating speeds, together with increased load rating. Positive prevention of oil leakage from the machine or the intrusion of mud and water are permanent safeguards. Easy adjustment of the hold-down and load-bearing is provided, while the base is of welded steel construction to permit low overall weight. With the

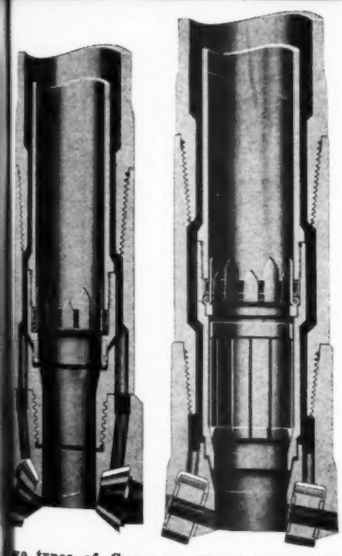
100% IN SOFT FORMATIONS, 60% IN HARD FORMATIONS WITH OUR CAMERON TYPE "C" CORE BARREL, WITHOUT A HARD FORMATION ADAPTER

—Says S. F. Jordan of Jordan Drilling Co.

" . . . 100% recovery in soft formations, and an average of 60% recovery in hard formations without a Hard Formation Adapter . . ." is the comment of S. F. Jordan of Jordan Drilling Company, who recently completed two contract holes for a Major Company in the Segno Area, Polk County, Texas. Mr. Jordan is shown third from the left in the group above, the others being, left to right: S. T. McWilliams, Helper; Bob Martin, Derrickman; S. F. Jordan, Sup't.; C. E. Whitehead, Driller; C. E. Wren, Fireman; Bob Watson, Helper.

Throughout the oil country, where large diameter, unconglomerated, full-length cores are essential, the Cameron Type C Rotary Core Barrel has earned and won the enthusiastic appreciation of practical well men, engineers, geologists and others. Its unique combination of such mechanical features as (a) Non-rotating inner barrel; (b) Uniformly slush lubricated cores; (c) Special design soft formation core heads; (d) Multi-diameter inner barrel assembly, combine to make it the one surest, most positive means of delivering desired cores to the derrick floor.

Operators who have not experienced the satisfaction of full and certain core recovery on run after run will gladly be provided, on request, with full details concerning the Cameron Type C Rotary Core Barrel.



wo types of Cameron Hard Formation dapters which permit the use of standard kes of Roller Type Hard Formation Cutter ads. Use of an adapter on a Cameron Type Rotary Core Barrel assures high percentage recoveries in the hardest formations.

Cross section view of he Cameron type C Rotary Core Barrel, showing the three-race angular contact bearing assembly which permits inner barrel to remain stationary while outer barrel revolves around it.

CAMERON IRON WORKS, INC.

711 MILBY STREET, HOUSTON, TEXAS

EXPORT OFFICE: 74 Trinity Place, New York, N. Y.
MIDLAND: W. P. (Red) Knight
CORPUS CHRISTI: J. M. (Red) Teague
LOUISIANA: Pelican Well Tool & Supply Company
OKLAHOMA and KANSAS: Carson Machine & Supply Co.
MEXICO: J. W. Allen, Apdo. 483, Tampico, Tamps.

pinion shaft equipped with SKF bearings, the load-bearings are a high-capacity roller type while the hold-down bearings utilize the ball design.

Representatives in attendance at the Emsco Derrick and Equipment Company exhibit in Booth 334 will be W. B. Sounitza, engineer; P. D. Browne; S. W. Webster; W. B. Davidson, chief engineer, and G. W. Walton.

D & B PUMP AND SUPPLY COMPANY:

A general line of pumping equipment, including both surface and sub-surface accessories, together with sucker rods and pull rods, will be exhibited by D & B Pump and Supply Company in Booth No. 332.

Produced from the highest grade alloy steel and manufactured under the strictest precision standards dictated by the A.P.I., each D & B part is interchangeable, while the pump as a whole is well-known for its excellent service record in the field.

In charge of the D & B exhibit will be E. E. Stevenson, manager of production, together with L. C. Scott, Mid-Continent sales manager.

YOUNGSTOWN SHEET AND TUBE COMPANY:

The parent company of The Continental Supply Company, the Youngstown Sheet and Tube Company will exhibit samples of all types of tubular goods and couplings in Booths Nos. 328 and 330. A special feature of the Youngstown tubular display will be Hydril drill pipe and Youngstown Speed-tite casing, both pioneered and developed by Youngstown engineers.

Company officials scheduled for attendance include W. E. Watson, vice-president; E. P. Corey, general manager of tubular sales; J. C. Siegle, general superintendent of the tubular division; and Myron S. Curtis, sales promotion manager.

THE YOUNGSTOWN STEEL PRODUCTS COMPANY:

A subsidiary of Youngstown Sheet and Tube Company, will have on display in conjunction with the parent company all types of forged steel unions, including the recently inaugurated handlebar type union. Of exceptional strong construction to resist making up and breaking down countless times, Youngstown Forged Steel Unions are supplied either with brass or steel seats machined to a mirror-like finish. Black or udylite cadmium treatment of these unions affords protection against sparks or corrosion—both constant hazards in the field against which no measure of prevention can be construed as an unnecessary safeguard.

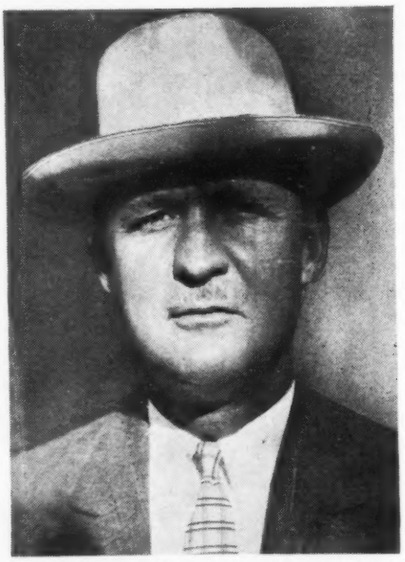
Representing the Youngstown Steel Products Company in their booth will be Ora C. Cox, manager of union sales, in company with Bruce Cox, representative.

WESTCOTT VALVE COMPANY:

Samples and parts of gate valves, drilling valves, check valves, choke valves, and Christmas tree fittings will comprise the Westcott exhibit. All Westcott products are produced in keeping with the latest design and metallurgical practice, using only the highest grade materials available. Thus, through Westcott, in the 13 years The Continental Supply Company has acted as exclusive distributors, the oil industry has been provided with valves measuring up to the most exacting requirements.

Occupying Booth No. 428, the Westcott exhibit will be manned by A. V. Wadsworth, vice-president; John Walker, Shreveport representative; Lyle Wadsworth, Tulsa representative, together with H. H. Tinch, Houston.

R. V. HANRAHAN, President, Humble Pipe Line Company, Houston, Texas.



R. L. CARRUTHERS, Asst. Gen. Superintendent, Sun Oil Company, Beaumont, Texas.

E. R. TURNER, Manager, Pan American Production Co., Houston, Texas.

BRODERICK & BASCOM:

In conjunction with the above exhibit in Booth 428, Broderick & Bascom will display samples of oil industry wire rope, a name that has been familiar to members of the oil industry for many years. In addition to an assorted display of samples shown, factory methods will be explained by D. Larkin, general manager; F. C. Zimmerman, sales manager; W. R. Gayle, Earl Deacon, and R. A. Hill, representatives.

MECHANICAL RUBBER COMPANY:

Samples of both Rough Rider Cord and Rough Rider Raw Edge Transmission Belting will be exhibited in Booth No. 430, occupied by the Mechanical Rubber Company. Both these types of belting were designed especially for oilfield service, having a cord-ply construction that permits a neat and correct adjustment of plies to the required weight and strength, with minimum elongation under enormous shock loads.

An interesting part of the Mechanical Rubber Company's display will be its samples of Super Rough Rider rotary hose, known for its ability to resist abrasion due to its multiple plies of strong cotton duck, flat braided steel wire, and durable live rubber. Also, Rough Rider slush pump suction hose, Hel-Fi steam hose and C. S. CO. packing will be on display.

Company representatives present will include B. F. Ruther, president; Walter E. Belcher, Mid-Continent manager; A. L. Langley; Louis Deutsch; and C. A. Franklin, Jr.

NEW BEDFORD CORDAGE COMPANY:

Made from only the highest grade selected manila fiber and manufactured with precision experience obtained only by skilled rope makers, New Bedford Cordage has been distributed exclusively to the oil industry since the company was first organized in 1912.

A large number of sizes of manila rope, together with drilling cables, bull ropes and catlines will be exhibited by the company in Booth No. 430, with representatives Geo. W. Haywood and Harry Davis, both of New York City, in charge.

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FRED E. COOPER

Tulsa, Oklahoma

Booth No. 1001-C (outside)

EXHIBIT: Display of Allis-Chalmers tractors.

Representative: Fred E. Cooper.

•

COORS PORCELAIN COMPANY

Golden, Colorado

Exhibiting with W. H. Curtin & Co.

(*Continued on Page 92*)

FAST'S *Self-Aligning* COUPLINGS

FROM FIELD TO REFINERY

On drilling rigs, in pumping stations, in refineries—in every division of the oil industry—Fast's Self-aligning Couplings keep production going.

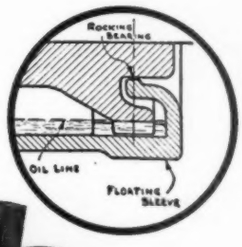
Engineers specify Fast's Couplings, leading manufacturers install them . . . for they know that only the best couplings are economical. Dollars saved on a coupling that doesn't stand up may cost *many thousands* in delays.

The bearing surfaces of Fast's Couplings are protected against wear by a positive film of oil. This oil is kept permanently clean by the rocking bearings' metal-to-metal seals, which are dust and moisture proof. No perishable materials, springs, grids, etc. are used.

Prevent operating troubles the economical way . . . when you purchase machinery, specify "Fast's" Couplings.

KOPPERS COMPANY
BARTLETT HAYWARD DIVISION
BALTIMORE, MARYLAND

Fast's Couplings Keep Production Going!



This cross section of a Fast's Coupling shows the precise metal-to-metal contact which forms a permanent dust and moisture proof seal. An exclusive feature in Fast's Self-aligning Coupling.

The illustration at left shows Fast's Couplings construction

(*Below*) Pumps and Gears—Phillips Petroleum Independence Pipe Line Station, Oklahoma City, Okla.

Koppers Divisions, Subsidiaries and Affiliates Serving the Oil and Gas Field

AMERICAN HAMMERED PISTON RING DIVISION - - BALTIMORE, MD.

BARTLETT HAYWARD DIVISION BALTIMORE, MD.

ENGINEERING AND CONSTRUCTION DIVISION - - PITTSBURGH, PA.

WESTERN GAS DIVISION FORT WAYNE, IND.

TAR AND CHEMICAL DIVISION PITTSBURGH, PA.

THE WHITE TAR COMPANY OF NEW JERSEY, INC. - KEARNY, N. J.

THE WOOD PRESERVING CORPORATION PITTSBURGH, PA.

NATIONAL LUMBER & CREOSOTING COMPANY - TEXARKANA, ARK.-TEX.

See our exhibit
Booths 500-502
Oil-World Exposition

KOPPERS

DESIGNERS · BUILDERS · PRODUCERS · MANUFACTURERS · DISTRIBUTORS · OPERATORS

(*Continued from Page 88*)

CORBETT CORPORATION

Houston, Texas

Booths Nos. 934, 936, and 938

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CORNING GLASS WORKS

Corning, New York

Exhibiting with W. H. Curtin & Co.

•

CORPUS CHRISTI OXYGEN COMPANY

Corpus Christi, Texas

Exhibiting with the Big Three Welding Equipment Co.

•

CRANE COMPANY

Chicago, Illinois

Exhibiting with Houston Oil Field Material Company.

Representatives: John Tancred, Ralph Hendrickson, Joe Greene, all of the Oil Sales Department, Chicago, Illinois, and M. W. Link, director of research and development, Chicago, Illinois.

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CROSBY STEAM GAGE & VALVE CO.

Boston, Massachusetts

Exhibiting with W. H. Curtin & Co.

•

CROUSE-HINDS COMPANY

Syracuse, New York

Booths Nos. 309 and 311

EXHIBIT: A large built-up exhibit is being constructed that will be in several tones of blue and orange and well illuminated. On display will be floodlights, plugs and receptacles, switches and all kinds of Condulets. Featured will be the new explosion-proof line of Condulets. A feature also will be made of a new Condulet of the explosion-proof type known as our EPC line, which is used for housing motor starters, circuit breakers, reactors, contactors, and assemblies of several of these within the same housing.

Representatives: G. G. Griffin, Dallas, district representative; R. P. Northup, Houston, Texas; J. L. McCullough, Kansas City, Missouri; R. H. Olley, E. R. Monesmith from Syracuse. Possibly F. C. Smith.

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CRUTCHER-ROLFS-CUMMINGS

Houston, Texas

W-K-M Company section

EXHIBIT: Principal items on display will be the Wilson welding machine and the W-K-M cleaning machine.

M. L. CASHION, Assistant Production Supt., Gulf Oil Corporation, Texas Division, Houston, Texas.

J. L. FINLEY, Superintendent of Refineries, Humble Oil and Refining Company, Houston, Texas.

E. E. OSBORNE, Superintendent of Materials, Houston Oil Co., Houston, Texas.

Representatives: A. S. Crutcher, E. L. Rolfs, J. D. Cummings, J. E. McAfee, and L. H. "Spec" Morris.

•

CUMMINS ENGINE COMPANY

Columbus, Ohio

Booth No. 1001 (outside)

Exhibiting with the Mid-Continent Supply Company.

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W. H. CURTIN & COMPANY, INC.

Houston, Texas

Booths Nos. 344 and 346

EXHIBIT: Laboratory and scientific apparatus and industrial instruments.

Representatives: B. B. Manuel, K. H. Clough, and M. A. Smith.

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CYCLONE FENCE COMPANY

Waukegan, Illinois

Exhibiting in United States Steel Corporation section.

•

D

D & B PUMP AND SUPPLY COMPANY

Dallas, Texas

Exhibiting with Continental Supply Company.

•

M. N. DANNENBAUM COMPANY

Houston, Texas

Booths Nos. 516, 518, 520, and 621

EXHIBIT: Equipment manufactured by the following firms will be displayed:

Fisher Governor Company—regulating and control equipment.

Barco Manufacturing Company—Barco flexible ball joints.

Sivyer Steel Casting Company—refinery return bends and castings.

Peerless Pump Company—deep-well pumps.

Representatives: M. N. Dannenbaum, Kenneth L. Puffer, Chas. W. Scamman, and W. F. Ballew.

•

DARLING VALVE & MANUFACTURING COMPANY

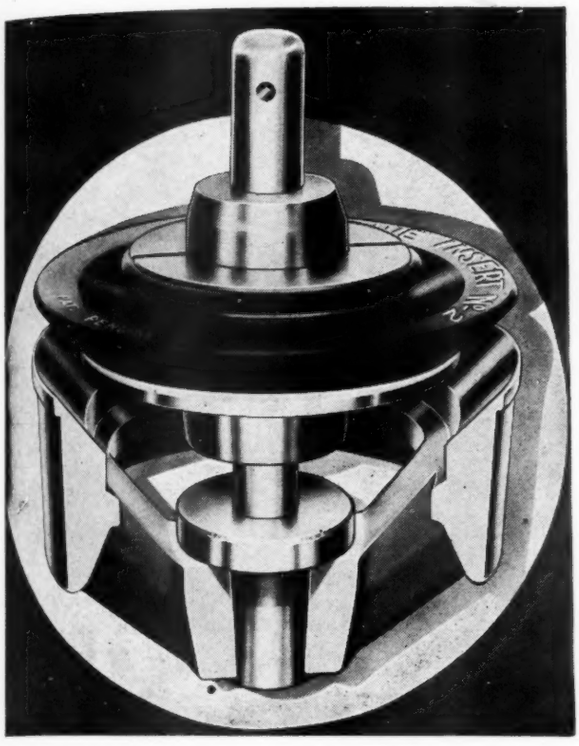
Williamsport, Pennsylvania

Booths Nos. 558 and 560

EXHIBIT: The following items will be displayed: all-bronze gate valves, special alloy gate valves, pipe line and flow-line gate valves, forged steel drilling-through and

(*Continued on Page 96*)

EXPOSITION, HOUSTON
THAT ARE MAKING
the World Over



New Mission Silver Top Valves

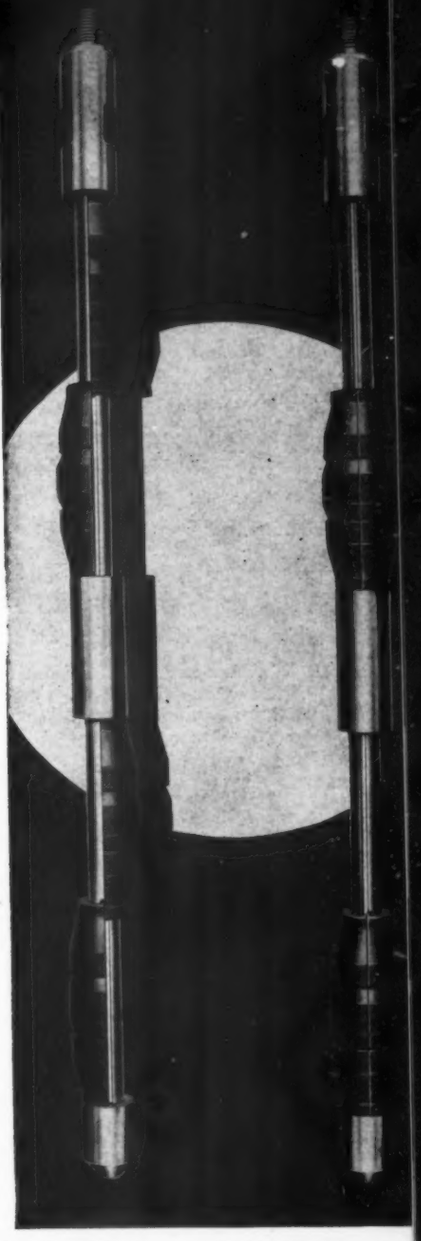
LAST 100% LONGER

SAVES MONEY formerly invested in buying new seats for conventional type valves.

SAVES LABOR continuously required for changing seats because of the TIME-PROVEN MISSION PRINCIPLE OF LONG LASTING SEAT...WITH REPLACEABLE BUSH.NGS that take the terrific blows that so quickly destroy the seats in conventional type valves.

BUSHING HELD FIRMLY IN PLACE . . . eliminating wear on valve seat under bushing and on bottom of bushing.

BUSHING EASILY CHANGED . . . by using attachment on Mission Seat Puller.



NEW
MISSION VALVELESS SWABS

—TANDEM MODEL—

Fastest Falling Swab in the World

SWABBING 3 TO 15 TIMES FASTER
» » » protecting the sand
» » » earning quicker profits by getting oil into the tanks quicker

WOULD INTEREST YOU, WOULDN'T IT?

SPLIT RUBBER PRINCIPLE
On Down-Stroke, half of each rubber rises above stationary half allowing an area for fluid passage larger than the area of flow around the A.P.I. pin. On Up-Stroke, movable half of each rubber drops back beside its other half.

SAFER: Gas pressure will open split rubber, permitting gas to by-pass, resuming its load without loss after gas has passed. No loose line over derrick floor to endanger crew.

NUMEROUS RECORDS IN EVERY OIL COUNTRY INVARIABLY SHOW 3 TO 15 TIMES FASTER SWABBING WITH MISSION VALVELESS SWABS.

MISSION MANUFACTURING CO.

HUMBLE ROAD . . . . . HOUSTON, TEXAS

(*Continued from Page 92*)

flow-line gate valves, semi-steel pipe line, flow line and gathering line gate valves, cast-steel gate valves for use on refinery and high-pressure power piping, fire hydrants, balls and seats, and Darcova, Darval, and Darflex valve cups.

Representatives: J. S. Kiesel, chief engineer; H. B. Foster, assistant sales manager; Frank Cavenagh, Texas representative; T. M. Jones, special Darcova representative; and M. L. Hough, vice-president and treasurer.

•

DAVIS REGULATOR COMPANY

Chicago, Illinois

Booths Nos. 728 and 730

EXHIBIT: The Davis line of automatic valve specialties and liquid level controls for the oil and gas industry.

•

THE DAYTON RUBBER MANUFACTURING COMPANY

Dayton, Ohio

Booths Nos. 256 and 258

EXHIBIT: Dayton cog-belt drives for pumping units, central powers, compressors, slush pumps, generators, Diesel units, and exhilarating machines in the field and at the refinery.

Representatives: Karl H. Glanton, vice-president in charge of mechanical sales; T. C. Davis, sales manager, Industrial Division; E. P. Spore, district sales representative; D. T. Winter, sales representative; and R. L. Wetzel, director of advertising.

•

DEAN BROS. COMPANY

Indianapolis, Indiana

Exhibiting in the Norvell-Wilder Supply Company section.

•

DELUXE PRODUCTS CORPORATION

LaPorte, Indiana

Exhibiting with Transportation Equipment Company.

•

C. B. DELHOMME

Houston, Texas

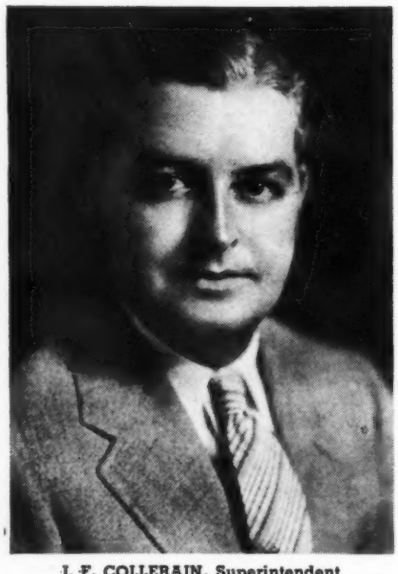
Booth No. 1014 (outside)

EXHIBIT: On display will be a $10,000 Matthews cruiser of 38-ft. length; also a 20-ft. Gar Wood streamline cabin utility boat, and several small outboard boats. A complete line of Evinrude and Elto motors, as well as the Evinrude high-pressure centrifugal pump now being used by oil companies in their exploration work, will be shown. Also, Chrysler and Kermath marine engines. Manufacturers whose products are being displayed are Matthews Company, Port Clinton, Ohio; Gar Wood, Inc., Marysville, Michigan; Evinrude Motors, Milwaukee, Wisconsin; Chrysler Corporation, Detroit, Michigan; Kermath Mfg. Co., Detroit; Old Town Canoe Co., Old Town, Maine; Thompson Bros. Boat Mfg. Co., Cortland, N. Y.

Representatives: C. B. Delhomme, owner; John Winter, sales manager; and J. R. Smith, salesman.

J. D. BRACK, Drilling Superintendent, Union Sulphur Company, Sulphur, Louisiana.

T. A. CARLETON, C & C Drilling Company, Houston, Texas.



J. F. COLLERAIN, Superintendent Telegraph and Telephone, Houston Pipe Line Company, Houston, Texas.

•

THOS. DEVLIN MANUFACTURING COMPANY

Burlington, New Jersey

Exhibiting with J. E. Bobo.

•

DIXON VALVE & COUPLING COMPANY

Philadelphia, Pennsylvania

Exhibiting with J. E. Bobo.

•

DODGE MANUFACTURING CORPORATION

Mishawaka, Indiana

Booth No. 767

EXHIBIT:Display will consist of power transmission appliances for oil-field equipment, including Dodge-Timken bearing pillow blocks, Diamond D clutches, Dodge V-belt sheaves, and Dodge V-belts.

•

DRIVING MASTER COMPANY

Sioux City, Iowa

Exhibiting with Transportation Equipment Company.

•

THE DUFF-NORTON MANUFACTURING COMPANY

Pittsburgh, Pennsylvania

Booths Nos. 614 and 616

EXHIBIT: Displaying lifting jacks of all types for every requirement.

Representatives: C. N. Thulin, Albert Roberts, and H. C. Gardner.

•

E. I. DU PONT DE NEMOURS & COMPANY, INC., RUBBER CHEMICALS DIVISION

Wilmington, Delaware

Booths Nos. 1108 and 1110

EXHIBIT: Neoprene products used from the time the well is started until the final product is delivered to the consumer will be shown. Neoprene is an engineering material that resembles rubber in strength, resilience, elasticity and abrasion resistance, but which the manufacturer claims is superior to rubber for severe service, as it resists the deteriorating effects of oils, gasoline, heat, ozone, oxygen, chemicals

and aging. Products made of Neoprene or products that include Neoprene in their construction to be displayed will include oil suction and discharge hose, submarine hose, curb service hose, tank truck hose, fuel oil hose, rotary drilling hose, gaskets, molded articles, tubing, oil-proof sunlight resisting clothing, gloves, packers, valves, pistons, couplers, saddles, oil-resisting shoes, bearings, and electrical cable.

Representatives: V. A. Cosler, Harry G. Bimmerman, and Allen F. Clark.

•

DURAMETALLIC CORPORATION

Kalamazoo, Michigan

Booth No. 409

EXHIBIT: Durametallic packing, a flexible metallic packing having a fibrous core about which is wrapped a metallic foil that has been specially treated and lubricated. Durametallic packing will be shown in three principal grades: Grade B-10, having a fibrous core with a lead foil wrapper; Grade C-10, having a lead and aluminum foil wrapper about an asbestos core; and Grade D-10, consisting of an asbestos core with a treated aluminum alloy foil wrapper. This last grade, the manufacturers state, will resist the attacks of hydrogen sulphide and sulphur dioxide. Durametallic will be exhibited in a number of bi-sected sets showing various cross-sectional styles that, according to the manufacturers, provide a ready response to gland pressure throughout the stuffing box depth.

Dura Plastic, a flexible semi-metallic packing, also will be shown in both bulk and spiral form.

Dura Seal, a mechanical seal that the makers say has given excellent service on pumps working acid and caustic solutions, as well as those handling liquids containing grit or finely divided solids, will be shown in several models; one in actual operation.

Dura Hooks, a packing puller or screw, having corkscrew bits of carefully tempered tool steel firmly affixed to handles with flexible shafts.

•

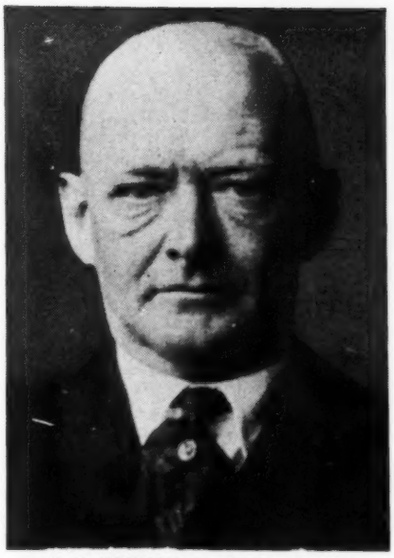
E

EASTMAN OIL WELL SURVEY COMPANY

Dallas, Texas

Booths Nos. 318, 320, 419, and 421

EXHIBIT: Display will include all survey equipment; namely, the single-shot survey instrument that is used in open hole to determine the angle and direction of the hole; the inside single-shot that performs the same service only inside the drill pipe through adaption to the retractable wireline core bit; the multiple-shot survey instrument that is run on drill pipe and takes one photograph every two minutes as the pipe is lowered into the hole, by means of which a complete survey is made of the hole in one round trip of the drill pipe; and the photographic drift indicator, used in drill pipe either on Halliburton wire line or as a go-devil to obtain the vertical angle of the hole.



R. G. DAWSON, Purchasing Agent, The Texas Company, Houston, Texas.

THOMAS M. MELTON, Drilling Superintendent, Magnolia Petroleum Company, Sinton, Texas.

W. M. WIGGINS, Assistant Purchasing Agent, Humble Oil and Refining Co., Houston, Texas.

In addition to these instruments there will be on display numerous explanatory models demonstrating the working principles of the company's instruments, together with field orienting equipment by means of which deflecting tools are set, and also the latest development in automatic orienting equipment to be used in conjunction with multiple-shot surveying. The booths will abound with photographs of various field scenes showing Eastman equipment in use, and with line drawings showing the various applications of directional drilling.

Representatives: H. John Eastman, president; James D. Hughes, vice-president; Ray F. Bolton, vice-president; C. P. Collins, division manager; Vann Wilson, field representative; and Dick Chappuis, field representative.

•

THE EDWARD VALVE & MANUFACTURING CO., INC.

East Chicago, Indiana

Booths Nos. 708, 710, and 712

EXHIBIT: Equipment displayed will consist primarily of forged and cast-steel high-pressure and high-temperature valves. The following types of valves will be included: globe and angle stop valves, check valves for refinery and process service; boiler non-return valves, feed-line valves, blow-off valves, globe and angle stop valves and check valves for power plant service; miscellaneous specialties, such as hydraulic valves for pressures up to 6000 lb.; small forged steel gauge and instrument valves; relief valves for unfired pressure vessels up to several thousand lb.; and pipe line strainers.

Representatives: W. W. Crawford, president; J. E. McDonald, sales manager; W. F. Crawford, sales promotion manager; and Edward representatives in the Texas area.

•

EMSCO DERRICK AND EQUIPMENT COMPANY

Los Angeles, California

Exhibiting with Continental Supply Company.

•

ENSIGN CARBURETOR COMPANY, LTD.

Huntington Park, California

Booth No. 757

EXHIBIT: Cut-out models of the Ensign carburetor.

Representatives: Gilbert Woodill and L. C. Arter.

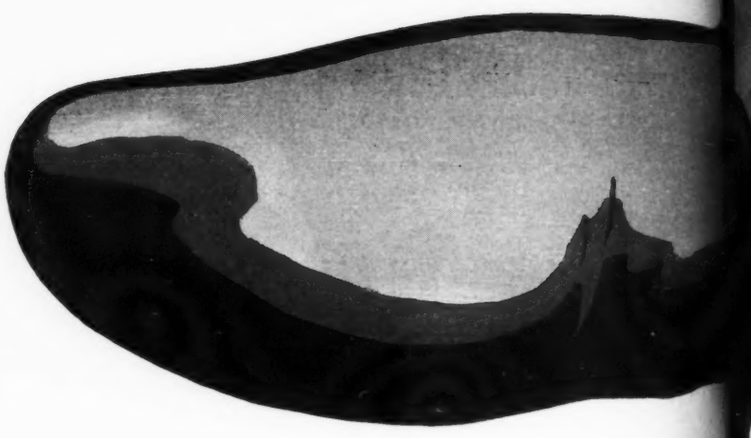
•

ERIE TOOL WORKS

Erie, Pennsylvania

Exhibiting with Allen, Sproull & Allen.

See THE "BIG 4" of HUGHE



The Oil World Exposition to be held in Houston is international in scope... and well worth the attendance of Oil Men from the "four corners of the world."

Hughes Tools are international in service... used throughout the major oil fields of the world.

HUGHES TOOL COMPANY
HOUSTON, TEXAS, U. S. A.

HUGHES ROCK BITS - CO

HE TOOLS *at the* OIL-WORLD EXPOSITION
HOUSTON, OCT. 11-16, 1937

Hughes Tool Company's display will be in the main Exposition Building — Spaces: 524-526-528-530-625-627-629-631.

O ITS - TOOL JOINTS - VALVES

EVERLASTING VALVE COMPANY

Jersey City, New Jersey

Booths Nos. 508 and 609

EXHIBIT: The Regular Everlasting Valve and the Everlasting Valve Special for 350-lb. pressure, well-known for boiler blow-off equipment on oil field boilers, will be the principal lines displayed. The Everlasting emergency throttle shut-off valve, a safety-first proposition for drilling rigs, also will be displayed. In addition the Everlasting duplex blow-off unit, Everlasting companion angle valve, Everlasting water column connection valve, and the company's unusual construction in valve design will be shown. The last mentioned items apply to refinery service.

Representatives: John H. Allen, president; and E. Boll, Jersey City sales staff.

•

F

GEORGE E. FAILING SUPPLY COMPANY

Enid, Oklahoma

Booth No. 1000 (Outside)

EXHIBIT: Various models of Failing oil exploration drilling rigs and equipment.

Representatives: George Failing, T. E. Failing, and W. T. Caldwell.

•

FAIRBANKS MORSE AND COMPANY

Chicago, Illinois

Exhibiting with Continental Supply Company.

•

FALK CORPORATION

Milwaukee, Wisconsin

Exhibiting with Continental Supply Company.

•

C. A. FISCHER COMPANY

Fort Worth, Texas

Exhibiting with Gulf Engineers, Inc.

•

FISHER GOVERNOR COMPANY

Marshalltown, Iowa

Booths Nos. 516, 518, 520, and 621

EXHIBIT: Displaying a complete line of automatic controls, including pump governors, pressure regulators, liquid level controllers, and many new automatic controls for the petroleum industry. The Wizard pilot-operated regulators will be on display, and for the first time will be exhibited the new Fisher averaging type liquid level controller pilot valve; also high temperature 1500-lb. diaphragm motor control valve.

Representatives: P. A. Elfers, sales manager, Marshalltown, Iowa; R. A. Engel, chief engineer, Marshalltown; C. D. Peterson, Tulsa, Oklahoma, district manager.

J. O. SUE, Gen. Supt. Natural Gas Department, Humble Oil and Refining Co., Houston, Texas.

H. D. CARMOUCHE, General Superintendent, Houston Pipe Line Company, Houston, Texas.

R. B. PAXSON, Asst. General Superintendent, Continental Oil Corp., Houston, Texas.

•

GEORGE J. FIX COMPANY

Dallas, Texas

Booths Nos. 314 and 316

EXHIBIT: Products displayed will be those manufactured by Baldwin-Duckworth Chain Corporation. For details of equipment to be shown, as well as those who will be in attendance, see listing under Baldwin-Duckworth Chain Corporation.

•

STANLEY G. FLAGG & CO.

Philadelphia, Pennsylvania

Exhibiting with Allen, Sproull & Allen.

•

FLUID PACKED PUMP COMPANY

Los Nietos, California

Booth No. 254

EXHIBIT: Working model of pump will be shown in operation in one corner of the booth; the remaining space will be utilized for displaying mounted models and separate parts.

Representatives: F. R. Norris, Los Nietos, California, general manager; Frank Norris, Los Nietos; and Robert J. Miller, Houston, Texas, Mid-Continent representative.

•

FOOTE BROS. GEAR AND MASHINE CORPORATION

Chicago, Illinois

Booths Nos. 1311 and 1313

EXHIBIT:On display will be representative units of the company's line of oil-well pumping speed reducers, including one of their largest type single reduction units the 30 SO, rating at 65 hp. at 20 strokes per minute, A. P. I. rating, and one of the smallest double reduction types, the 9 DO, which rates at 3 hp. at 20 strokes per minute. Also on display will be one of their medium size double reduction units, 17 DO running with the cover off to show the internal construction and oil circulating system.

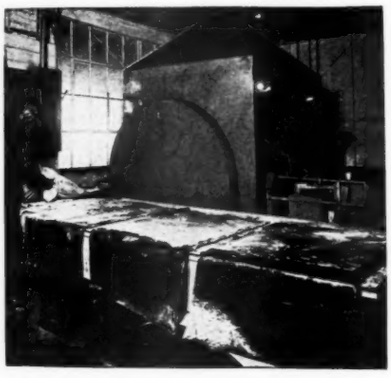
Representatives: George J. Fix, Dallas; T. C. Graham, Overton, Texas, East Texas representative; Max E. Landry, Tulsa, Oklahoma, Oklahoma representative; and F. A. Emmons, vice-president and general sales manager.

A NEW SCIENCE OF RUBBER MAKING

An Exclusive Development for Patterson-Ballagh Protectors

Milling is done on heavy rolls and chemicals uniformly distributed throughout

Specialization enables a manufacturer to go farther in the development of a product than can be accomplished in any plant where many articles are produced. The Patterson-Ballagh factory in Los Angeles produces one principal article — drill pipe and casing protectors. The plant was



Adding chemicals during mixing, after which sheets are milled.

planned, machinery designed and engineers selected with special abilities to develop the world's toughest rubber for protector service. Now for ten years this plant has constantly improved its product and perhaps more than 90 per cent of all protectors used throughout the world have been produced in this factory.

In no application is rubber subjected to such terrific abuses as in an oil well where it must protect the drill pipe and casing, rotating on a film of drilling mud and subjected to severe thrusts. The rubber must have tenacity to cling to the pipe regardless of conditions.

Deeper drilling has added additional problems. All of the requirements of rotary well drilling have been met by the application of Patterson-Ballagh Protectors. These are not merely rings of rubber but are the result of years of costly development during which time entirely new theories of rubber structure, compounding, chemicalizing and molding have been created and from these vast experimental processes the best methods have been devised. In every step during production the rubber is tested, checked and rechecked. After curing, every Patterson-Ballagh Protector is tested for hardness in at least four places and inspected for the purpose of discovering any imperfection before release for trimming.

Premium-priced rubber crudes are used, the cost of which is approximately 25 per cent more than certain other grades of rubber that could be used. Special chemicals are introduced during the compounding that help create an elasticity found in no other type

Rubber slugs are loaded into moulds and cured scientifically.

HYDRAULIC Expander for final test of P-B Protectors. This machine duplicates in the factory the working conditions encountered in the field. It detects internal flaws in the rubber.

of rubber. These are just a few of the points in manufacturing Patterson-Ballagh Protectors that make them the most enduring application in the field. It costs more to produce these protectors. The service they render amounts to many times the initial cost of the product.

Interesting manufacturing data will be supplied upon request by addressing:

PATTERSON-BALLAGH Corp., Ltd.

Plant and General Offices:
1900 E. 65th St., Los Angeles, Calif.

Mid-Continent Office:
1507 Maury Street, Houston

New York City Office:
39 Courtlandt Street

C. G. FORSHEY

Houston, Texas

Booths Nos. 1112 and 1114-A (tent)

•

THE FOXBORO COMPANY

Foxboro, Massachusetts

Booth No. 105

EXHIBIT: A complete instrument panel for oil refineries with actual operating instruments on it will be displayed. Featured will be such new developments as the Stabilog Potentiometer Controller with Deviation Record, both electric and pneumatic distance measurement and control, and pressure compensated flow meter. Also included will be the regular standard Foxboro indicating, recording, and controlling instruments that contain many recent improvements. The instrument panel will enable visitors to visualize how similar installations would look in their own plants. A number of the instruments are to be fixed or cut-away so that the operating mechanism easily can be seen and demonstrated.

Representatives: Messrs. Lane, Griffith, Burnett, Parten, McMahon, Huckman, Bryan, and Thomas.

•

THE FRANCE PACKING COMPANY

Philadelphia, Pennsylvania

Booth No. 312

EXHIBIT: A complete line of metallic packing for use on all types of engines and compressors will be displayed.

Representative: James A. McPeak.

•

FRICK COMPANY, INC.

Waynesboro, Pennsylvania

Booths Nos. 928 and 930

EXHIBIT: Display will include a 7¾ by 5 booster compressor as used for producing low temperatures. This same machine with slight alterations in the control valves is used with Freon-12 for air conditioning work. The machine will be turned over slowly by a double-reduction-gear motor, as also will a 5 by 5 cut-away ammonia compressor, making it possible to see clearly all the moving parts. Another feature of the exhibit will be a model of a dual pressure ice-making plant.

Representatives: J. C. Rust, A. T. Feaster, Geo. M. Basore, V. J. Sparks, A. E. Roebke, and J. H. Carter. In addition to these men an executive from Waynesboro likely will attend.

•

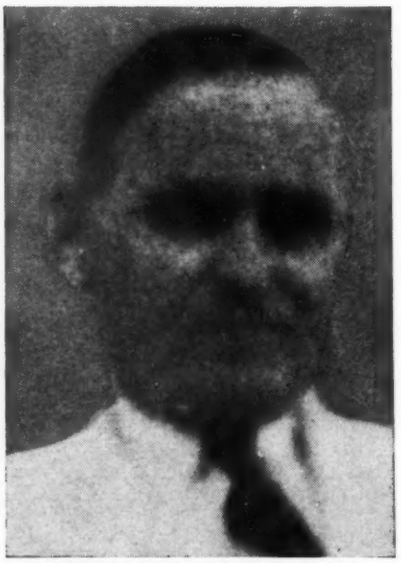
FRICK-REID SUPPLY CORPORATION

Tulsa, Oklahoma

Booths Nos. 350, 352, 354, 356, 451, 453, 455, and 457

T. H. ANDREWS, Division Production Engineer, Stanolind Oil and Gas Co., Houston, Texas.

J. R. HORRIGAN, Vice-Pres. and Gen. Supt., Apex Construction Company, Houston, Texas.



DAVID FRAME, General Superintendent, Humble Oil and Refining Company, Houston, Texas.

G

GALION ALLSTEEL BODY COMPANY

Galion, Ohio

Exhibiting with Transportation Equipment Company.

•

GALION IRON WORKS

Galion, Ohio

Exhibiting in Browning-Ferris Machinery Company section.

•

GARDNER-DENVER COMPANY

Quincy, Illinois

Exhibiting with Continental Supply Company.

•

GARLOCK PACKING COMPANY

Palmyra, New York

Booths Nos. 519 and 521

EXHIBIT: Complete line of mechanical packings and gaskets of particular interest to the oil industry, including Garlock Chevron packing, Garlock 7021 compressed asbestos sheet packing, Garlock Metal packings, and Garlock Klozure oil seals.

Representatives: W. A. Redd, Jr., district sales manager; R. I. Hamilton, assistant manager, metal packing department; F. C. Thorn, chief chemist; C. B. Tyler, service department; Ford Wilders, advertising department; A. C. Gustafson, sales representative; J. H. Roche, sales representative; and A. T. Crump, sales representative.

•

GARROTT BRASS AND MACHINE COMPANY

Houston, Texas

Booths Nos. 613 and 615

•

GAS POWER, INC.

Houston, Texas

Booths Nos. 204, 206, 305, and 307

•

GASO PUMP AND BURNER MANUFACTURING COMPANY

Tulsa, Oklahoma

Booths Nos. 512 and 514

EXHIBIT: No particular item of equipment will be on display, rather the booths will be maintained as a place for representatives to meet the members of the oil industry.

(Continued on Page 109)

(Continued from Page 104)

Representative: L. D. Armstrong, secretary-treasurer; H. F. Stover, assistant treasurer; G. W. Dreyer, sales representative; H. A. Wienecke, Jr., sales representative; and T. H. Flanagan, sales representative.

•

GEARENCH MANUFACTURING COMPANY

Houston, Texas

Booths Nos. 1323 and 1325

EXHIBIT: Petol and Titan tools will be on display. The company makes 25 different types and 250 different sizes of tongs.

Representatives: C. E. Olsen, president and general manager; and W. T. Olsen, vice-president and secretary.

•

THE J. J. GIBSON COMPANY

Dallas, Texas

Booths Nos. 1332 and 1433

EXHIBIT: Equipment shown will be Leece Neville voltage-regulated generators from a 75-watt conventional type automatic generator with full-voltage regulation up to 1500-watt generators with full-voltage regulation especially adaptable to oil field equipment; Fairbanks Morse magnetos of the dust-, water-, and explosion-proof type; and Handy governors and Handy Perfection Oil-bath Air Cleaner.

Representatives: J. J. Gibson, of the J. J. Gibson Co., Dallas, Texas; M. A. Eason, sales engineer, Leece Neville Company; and F. J. Bartella, of the Fairbanks-Morse Company, Magneto Division.

•

GLOBE STEEL TUBES COMPANY

Milwaukee, Wisconsin

Booths Nos. 934, 936, and 938

•

GOODALL RUBBER COMPANY OF TEXAS

Houston, Texas

Booths Nos. 750 and 752

EXHIBIT: A complete line of mechanical rubber goods, featuring especially the Goodall Long-Life rotary hose and Barney couplings; rotary hose for all kinds of digging from the "post hole" type to 10,000 ft. and better. A complete line of steam hose led by Inferno. For the marketing end of the industry will be shown Goodall Newtype Cord, Newtype Synplastic for wet service, hose for the tank truck, hose for the curb pump, hose to fill the radiator, for the air pump, the grease pump, and for washing the car. There will be many types of hose shown but especial attention will be given to Long-Life rotary hose and Barney couplings. There will be a complete display of Flexitallic gaskets for which Goodall is the distributor.

W. E. TRAUTWEIN, Purchasing Agent, Standard Oil Company of Kansas, Houston, Texas.

W. W. SCOTT, Chief Petroleum Engineer, Humble Oil and Refining Company, Houston, Texas.

R. N. POSGATE, Production Engineer, Shell Petroleum Corp., Houston, Texas.

GOODALL SEMI-METALLIC HOSE & MANUFACTURING COMPANY

Philadelphia, Pennsylvania

Exhibiting with J. E. Bobo.

•

GRANT OIL TOOL COMPANY

Houston, Texas

Booth No. 1212 (tent)

•

GRAY TOOL COMPANY

Houston, Texas

Booths Nos. 444, 446, 448, 545, 547, and 549

EXHIBIT: Display will include complete showing of the company's A. S. A. Series Systems of Well Control and related parts. In addition, the company's line of rotary drilling and fishing tools will be shown. The latter include Gray swivels, Gray release spears, Gray god-type overshots, Gray slip sockets, wall hooks, back-up tools, and float valves.

Representatives: R. A. Mueller, Roger Smith, C. E. Richards, Ray E. Kollar, J. D. Isaacks, E. F. Hill, C. E. Heath, John Lemley, and J. R. Yancey.

•

GREAT LAKES STEEL CORPORATION

Detroit, Michigan

Booth No. 1042-A (outside)

•

GROVE REGULATOR COMPANY

Oakland, California

Booth No. 644

EXHIBIT: Displaying cut-away models of the Grove Universal pressure-reducing regulators and back-pressure regulators. Also on display will be some new models not yet announced. The operation of the company's pressure-reducing and back-pressure regulators will be demonstrated.

Representatives: M. H. Grove, president; and the following oil field sales representatives: A. T. Donnelly, V. B. Gresham, and W. A. Hammann.

•

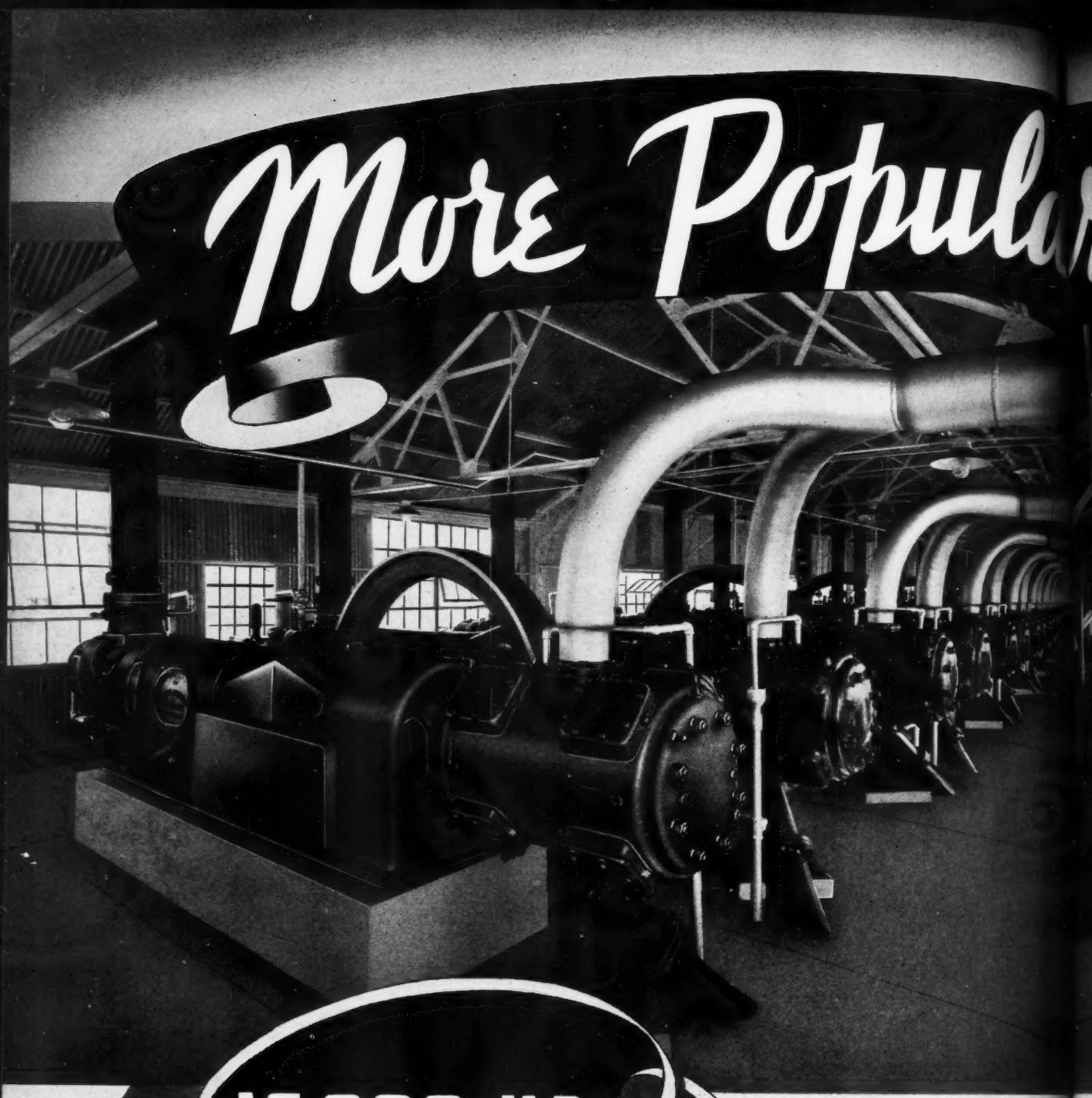
THE GUIBERSON CORPORATION

Dallas, Texas

Booths Nos. 458, 460, and 561

EXHIBIT: One booth will be devoted to the company's equipment used in the new method of drilling-in under controlled pressure, which is as follows: The Type "A" friction kelly drive will be set up on the "D" oil saver as it is used on wells. The Type "B" collapsible friction kelly drive will be set up with the "C" drilling head,

(Continued on Page 112)



16,000 H.P. INSTALLED DURING LAST EIGHT MONTHS

The CLARK new design "250" with its modern full-pressure lubricating system, overhead exhaust, and sturdy construction, has always been a favorite in plants where heavy loads and long hours are part of the regular routine.

CLARK'S policy of keeping this horizontal unit strictly up-to-the

CL

...ar than Ever!

minute as regards every possible mechanical improvement has enabled the "250" to maintain its strong position in its field, in spite of the stiff competition from the new, sensational CLARK "Super 2 Angle."

CLARK has pioneered nearly every major advance in the heavy compressor field. Bulletins on request.

NEW INSTALLATIONS
Since Jan. 1, 1937

Standard Oil Co., of Louisiana
Phillips Petroleum Company
Cabot Company
Parade Gasoline Company
Humble Oil & Refining Company
Smith Bros. Refining Company
Hercules Gasoline Corporation
Gregg-Tex Gasoline Company
Empire Oil & Refining Company
Ohio Counties Natural Gas Co.

See CLARK Section, 1937 Composite Catalog.

CLARK BROS. COMPANY
Olean, New York, U. S. A.

Export Office: 30 Rockefeller Plaza, New York. Midcontinent Sales Offices and Warehouses: Tulsa, Okla., and Houston, Texas. West Coast Office: Smith-Booth-Usher, 2001 Santa Fe Ave., Los Angeles. Foreign Offices: 72 Turnmill St., E. C. 1, London, England; 4 Str. General Poetas, Bucharest, Roumania.

CLARK

(Continued from Page 109)

the detachable coupling, and the "D" oil saver. The small collapsible kelly drive will be shown set up with the "B1" oil saver, showing this equipment as it is used in clean-out work. The "C2", the "D", and the "B1" oil savers also will be in this section lying on the floor, so that the inside readily can be seen, revealing the type of rubber construction in these oil savers, etc. The float valve and the casing tong also will be exhibited in this section.

Another booth will be devoted to production tools, which will include the Type 'E" tubing catcher shown with and without anchor and the "B" tubing catcher with and without anchor. There is to be a hydraulically-operated rack where tubing catchers can be operated to show them working. In this booth also will be shown three weights of floor blocks and two spiders, the medium and heavy types. Here will be exhibited the sucker rod stripper, the "C" tubing stripper, the tubing tong, and the casing tong.

In the third booth will be shown packers. The control head packers are the following types: "C1", "C", "G1", "GT", "GL", "GA", "F", and "R". Here will be the spiral tubing packer, the spiral casing packer, the bottom-hole plug, the collapsible core plug, and the wash down plug. Also in this booth will be shown the company's complete line of swabs. the Type "K" tubing and casing swabs, the Type "A" tubing and casing swabs, the Type "H" tubing swab, and Type "F" tubing and casing swabs. Rope sockets also will be in this group.

Representatives: S. A. Guiberson, Jr., president; H. M. Haseltine, vice-president and general manager; W. R. Guiberson, vice-president and sole distributor in California of Guiberson products; Allen Guiberson, vice-president in charge of manufacture, and engineer; Albert Pranger, chief engineer; and Gordon G. Guiberson, sales manager. It also is intended to have all salesmen who are conveniently located to attend the Exposition.

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GULF ENGINEERS, INC.

Houston, Texas

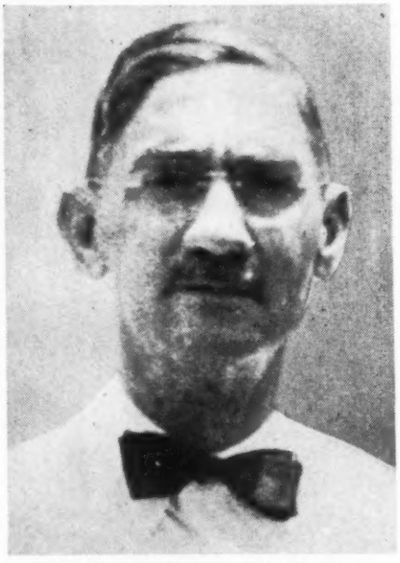
Booths Nos. 324, 326, 425, and 427

EXHIBIT: Material on display will include the Keil shale shaker, featuring step deck construction, and four-section screen cloths, permitting replacement of screen cloths when necessary. There are no springs, cams, or other loose moving parts used in the construction of this shaker, all resilient parts being made of rubber. Also on display will be the Chiksan all-steel rotary drilling hose, all-metal dock loading hose, together with heavy-duty swivel joints for cementing service. The Chiksan three-way disc bit and heavy-duty reamer also will be shown, as well as the new Chiksan circulating head, or "Poor Boy" Swivel, and the Chiksan mud gun.

Another feature of the exhibit will be the Varco heat-treated and ground slush pump liners and piston rods. Also shown will be the Lamb solid slush pump piston and a representative selection of the Volz steam specialties.

Representatives: E. F. Goggins, C. A. Muncey, and P. B. Hamilton.

T. R. HANRAHAN, Asst. Gen. Superintendent, Humble Pipe Line Company, Houston, Texas.



JOHN H. BRINGHURST, Chief Engineer, American Petroleum Company of Texas, Houston, Texas.

H. J. DeARMAN, DeArman Bros. Drilling Co., Houston, Texas.

H

HALLIBURTON OIL WELL CEMENTING COMPANY

Duncan, Oklahoma

Booths Nos. 132, 134, 136, 138, 140, 237, 239, and 241

EXHIBIT: The following products will be displayed:

Multiple-stage cementing devices—A modern necessity in deep-well cementing, making it unnecessary to pump all the cement down the entire length of the casing and up behind the casing; reduces by about 50 percent the pump pressure required to place the cement; protects shallow productive formations behind the casing.

Full-hole cementing devices—A modern method of cementing combination strings, which consists of a blank string of casing, on the lower end of which is a perforated section, or screen, of the same diameter as the blank casing. It means that a full sized hole is drilled into the producing sand, a screen or perforated liner of the same size as the casing is run on the bottom of the casing, circulation is established down the entire length of both the blank and perforated sections of the combination string to remove cavings, cuttings and heavy muck from behind the screen, and the casing is cemented above the screen, all in one continuous operation. It provides up to 30 percent more screen area, 60 percent more drainage surface, and allows 30 to 50 percent more core recovery.

Cement wash pipe lining for screen or perforated liners—May be used with any screen or perforated liner or in the perforated section of a combination string. The lining is very easily drilled out of the perforated section after it has served its purpose.

Co-axial spiral—Prevents, where installed. direct contact between the casing and hole at critical points in the well, giving additional assurance of a thorough distribution of cement at those points.

Floating equipment—Float collars, guide shoes, and float shoes for use with all makes of casing and casing threads. The designs provide ample floating strength for even the longest strings of casing, efficient guiding of the shoe, minimum interference with establishing circulation after the casing is landed, minimum interference with the flow of cement, co-ordinated design with cementing plugs, and drilling-out ease.

Formation testing devices—The method of obtaining a test for the productivity of formations while drilling a well, without setting a string of casing and bailing. The device also is used for making water shut-off tests in casing after cementing.

Measuring devices—A complete line of measuring devices from the standard type to the heavy duty type.

Four Wheel Drive trucks—The success of the Four Wheel Drive principle in getting around difficult road conditions in the oil fields is a feature of Halliburton oil field service, and these trucks are available to the oil industry and are serviced by Halliburton Oil Well Cementing Company.

WHEN You COME TO HOUSTON

to attend the OIL-WORLD Exposition

OCTOBER 11-16-'37

YOU WILL FIND THE NORVELL-WILDER MAN

waiting to give you

A HEARTY WELCOME

at the

NORVELL-WILDER SECTION OF BOOTHS

Numbers 104-106-108-110-112-114-116-118-120-
205-207-209-211-213-215-217-219-221.

●

HERE YOU WILL FIND DEMONSTRATED THE PRODUCTS OF

JEFFERSON UNION COMPANY « COFFING HOIST COMPANY « THE KENNEDY VALVE MANUFACTURING COMPANY « A. LESCHEN & SONS ROPE COMPANY « HEWITT RUBBER CORP. « WESTERN BLOCK COMPANY « DEAN BROTHERS COMPANY « BAASH-ROSS TOOL COMPANY « PRODUCTION EQUIPMENT COMPANY « QUIGLEY COMPANY, Inc.

Rest . . .

AND MAKE YOURSELF AT HOME in the spacious reception room of the Norvell-Wilder Section of Booths.

Norvell-Wilder *Supply Company*

HAPPY BELTING COMPANY

Tulsa, Oklahoma

Booth No. 1007 (outside)

EXHIBIT: Happy pumping unit, Happy idlers, and transmission equipment.

Representatives: G. I. McBride, P. E. Mahaffey, and A. F. Nixon.

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HARNISCHFEGER CORPORATION

Milwaukee, Wisconsin

Booths Nos. 1222, 1224, 1226, 1228, and 1230 (tent)

EXHIBIT: On display will be the P&H bantam-weight, Model 150, ½-yd. dragline; also there will be a demonstration on welding as applied to the oil industry. This welding will be done with P&H Hansen Smootharc welders and using P&H Smootharc welding electrodes. In addition on display will be two P&H electric hoists, one known as the "Zip-Lift." This hoist is available in 250, 500, and 750-lb. capacities. The one on exhibit will be of 250-lb. capacity. The other hoist will be type "R" hoist of one-ton capacity. Other products to be displayed will be the P&H ½-yd. dragline bucket and a lighting plant.

Representatives: J. H. Enochs, Dallas, Texas, district manager; Wayne Green, sales engineer in the Dallas office; W. L. Hartley, district manager of the Memphis, Tennessee, office, and others as yet not determined; as well as representatives of R. B. Everett Co., Houston, Texas, their agents.

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THE HAYS CORPORATION

Michigan City, Michigan

Exhibiting with W. H. Curtin & Co.

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HAZARD WIRE ROPE DIVISION OF AMERICAN CHAIN & CABLE COMPANY, INC.

Wilkes-Barre, Pa.

Booth No. 150

EXHIBIT: Will feature a line of wire ropes as used in the oil industry.

Representatives: W. W. Runkle, H. S. Brady, B. B. Burns, and J. R. McCrea.

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HERCULES MOTORS CORPORATION

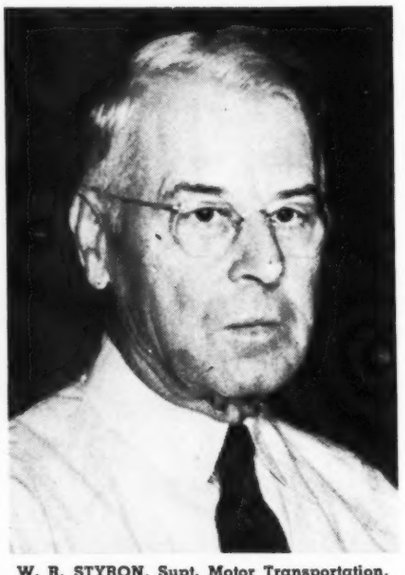
Canton, Ohio

Booths Nos. 438, 440, 539, 541 (inside) 1000-B (outside)

EXHIBIT: Internal combustion engines and power units arranged for operation on natural gas, gasoline, and Diesel fuel oil. Some units will be in operation in the outside space. Units shown will be the company's standard engines, standard power units, as well as several units arranged especially for oil-field application. These units will include specialties that reduce the fire hazard and make them weather-proof. Shown also will be several new models, including a 4-cylinder Diesel engine. The 6-cylinder engine, already in production, will be displayed as well.

Representative: A. B. Wehling.

W. V. VIETTI, Division Petroleum Engineer, The Texas Company, Houston, Texas.



W. R. STYRON, Supt. Motor Transportation, Humble Oil & Refining Co., Houston, Texas.

M. C. McDOWELL, Division Superintendent, Rio Bravo Oil Co., Houston, Texas.

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HEWITT RUBBER CORPORATION

Buffalo, New York

Norvell-Wilder Supply Company section

EXHIBIT: Complete display of industrial rubber goods, especially those items pertaining to the oil industry.

Representatives: L. D. Bigelow, Chicago, Illinois, manager of Midwest Division; F. H. Dickinson, Houston, Texas, manager; H. H. Patterson, Buffalo, New York, assistant sales manager; and C. G. Travers, Buffalo, assistant sales manager.

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HILLS-McCANNA COMPANY

Chicago, Illinois

Booths Nos. 228 and 230

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HOPPER MACHINE WORKS

Bakersfield, California

Booths Nos. 336, 338, and 340

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A. C. HORN COMPANY

Houston, Texas

Booths Nos. 408 and 410

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HOUSTON OIL FIELD MATERIAL COMPANY

Houston, Texas

Booths Nos. 150, 152, 154, 156, 158, 160, 251, 253, 255, 257, 259, 261

EXHIBIT: Equipment of a number of manufacturers for whom the Houston Oil Field Material Company is distributor will be displayed. The Wheland Company, Chattanooga, Tennessee, will exhibit one of their new pumps, and the Standard Brake Lining Company, Los Angeles, California, will display a small loom for weaving brake lining. Among other exhibitors will be the Hazard Wire Rope Company, The Technical Oil Tools Corporation, The Emsco Screen Pipe Company, Crane Company, Ajax Well Tool Corporation, Lucey Boiler and Manufacturing Company, Worthington Pump & Machinery Corporation.

Representatives: George O'Leary, G. W. Hunt, J. E. Lassiter, A. W. Waddill, Joe Duncan, and several others.

HOUSTON OILWELL FIRE-FIGHTING COMPANY

Houston, Texas

Booths Nos. 1035 and 1036 (outside)

EXHIBIT: Equipment exhibited will be one of the company's large manifolds complete, mounted on a tandem-drive White truck, and their patented shields. This latter piece of equipment will be demonstrated by setting it at the mouth of a 7-in. O. D. pipe discharging burning gas.

Representatives: J. W. Crowder, O. L. Patton, H. L. Patton, Miss Iva Lee Moon, and Miss Dora V. Patton.

HOUSTON SLUSH PUMP REPAIR COMPANY

Houston, Texas

Booth No. 260

HUGHES TOOL COMPANY

Houston, Texas

Booths Nos. 524, 526, 528, 530, 625, 627, 629, 631

EXHIBIT: Practically all products of the Hughes Tool Company will be on parade in a very interesting and comprehensive manner, featuring all recent improvements and developments in equipment, sectioned and illustrated so that interior construction and workmanship may be viewed to best advantage. Working models also will be shown. An adequate staff of attendants will be present at all times to explain and demonstrate all improved features of Hughes tools. These will consist of representatives of both the sales and engineering departments.

Products exhibited will include rock bits, core bits, tool joints, reamers, drill collars, chokes, tubing and flow heads, valves and fittings, complete assembled Christmas trees, plunger lift, and other specialized oil industry tools.

HUMBLE OIL AND REFINING COMPANY

Houston, Texas

Booths Nos. 5 and 7

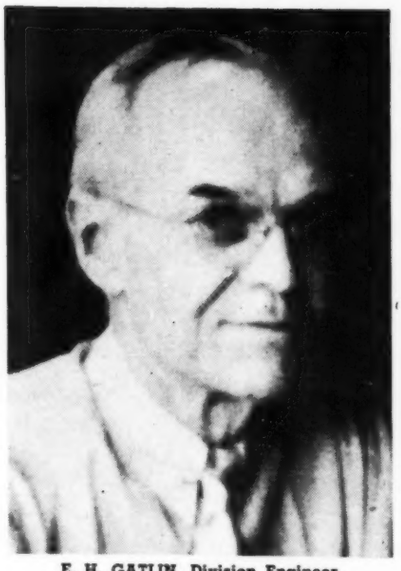
EXHIBIT: On display will be a number of products manufactured by the company for which there is a demand in the petroleum industry. The exhibit will be operated under the direction of the sales department and a representative of the specialty manufacturing department will be on hand at all hours.

HUNT TOOL COMPANY

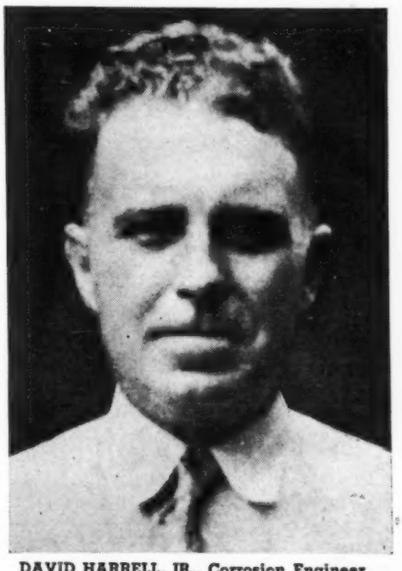
Houston, Texas

Booths Nos. 630 and 632

EXHIBIT: Hunt wire-line core barrel and core bits, as well as all other types of drilling bits.



E. H. GATLIN, Division Engineer, The Texas Company, Houston, Texas.



DAVID HARRELL, JR., Corrosion Engineer, Houston Pipe Line Company, Houston, Texas.

C. E. REISTLE, Asst. Chief Petroleum Engineer, Humble Oil and Refining Co., Houston, Texas.

Representatives: T. N. Hunt, U. V. Seales, E. K. "Curley" Lane, Tom Reagan, P. M. Hunt, and Joe Hicks.

HYATT BEARINGS DIVISION OF GENERAL MOTORS CORPORATION

Harrison, New Jersey

Booths Nos. 704 and 706

EXHIBIT: The extensive use of Hyatt roller bearings in oil field machinery will be shown.

Representatives: C. L. Newby, Chicago, Illinois, manager Hyatt Roller Bearing Sales Company; F. Webster, Chicago, sales engineer; A. J. Swisler, Dallas, Texas, sales engineer; J. M. Kelly, Pittsburgh, Pennsylvania, manager Hyatt Roller Bearing Sales Company; L. L. Hill, Pittsburgh, sales engineer; H. K. Porter, general sales manager, and H. M. Carroll, advertising manager, for the home office, Harrison, New Jersey.

HYDRIL COMPANY

Los Angeles, California

Booths Nos. 1126, 1227, 1229, 1231, and 1233

EXHIBIT: The Hydril joint for internal and external flush drill pipe. This thread has been applied to 2,000,000 ft. of various sizes of drill pipe. The Hydril joint on internal flush drill pipe gives the maximum I.D. of drill pipe from the kelly to the bit with a minimum O.D. on the upset and tool joint, the makers say, who also state that the Hydril joint for external flush drill pipe has many advantages, especially in controlled drilling and pressure completion operations; also, the operator is able to get the maximum size and strength of drill pipe in a minimum size string of casing. The Hydril joint for plain end casing and external upset casing also will be displayed. The Hydril two-step thread adapted to external upset plain end casing allows the operator to set respective sizes of casing to great depths as the slight amount of external metal in the upset gives a joint efficiency of 85 percent. The Hydril two-step thread applied to plain end casing is comparable to A.P.I. threaded and coupled and, according to the manufacturers, has the advantage of better clearance because the casing joint is internal and external flush.

The Hydril C. P. blow-out preventer, which just recently has been offered the industry after several years of development work on an experimental well at the Torrance factory, will be shown. The new Hydril C. P. blow-out preventer is automatic and will close instantly on a square kelly and will stand pressures up to 6000 pounds, it is stated. It will allow the operator to continue rotating or pulling the entire string out of the hole and the function of the blow-out preventer in closing on the square kelly and passing of the tool joints is entirely automatic.

Also displayed will be the various tools used in conjunction with pressure drilling, such as drill pipe float and back-pressure valves, drop-in type back-pressure valves, casing plugs, pump down drill pipe plugs, etc.

Representatives: George E. Tyson, Houston, in charge of sales for the Hydril Company of Texas; Claude Banta; Mel Trelfall; Morgan Jones; Bill McNamara; John Cronin; Jack Engstrom, chief engineer at the Torrance factory; Bert Stone, general manager; and Earl M. Daniels, sales manager.

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IMPERIAL BRASS MANUFACTURING COMPANY

Chicago, Illinois

Booths Nos. 634 and 636

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INDUSTRIAL-SCIENTIFIC SUPPLY COMPANY

Fort Worth, Texas

Booth No. 249

EXHIBIT: Instruments for controlling, recording, and indicating temperature, pressure, and flow, as manufactured by their principals: Taylor Instrument Companies, Rochester, New York. Also, equipment manufactured by Precision Scientific Company.

Representatives: A. J. Fleig, Taylor Instrument Companies, Rochester; E. H. Triphaus and L. G. Marsh, Taylor Instrument Companies, Tulsa, Oklahoma; B. H. Wilson, Industrial-Scientific Supply Company, Fort Worth, Texas; R. E. O'Neill and Fred Wellborn, Industrial-Scientific Supply Company, Houston, Texas.

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INGERSOLL-RAND COMPANY

Phillipsburg, New Jersey

Exhibiting with Browning-Ferris Machinery Company.

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INTERNATIONAL DERRICK AND EQUIPMENT COMPANY

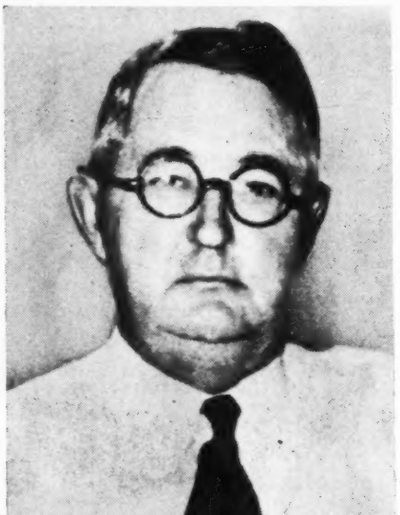
Columbus, Ohio

Booth No. 1039 (outside)

EXHIBIT: The following equipment will be displayed:

Ideco "Big Giant" Drawworks. The Ideco Big Giant is the largest of a series of three drawworks, similar in design, that give the operator a choice of recommended drilling depths from 5000 ft. to 15,000 feet. The construction features of this unit are as follows: (1) enclosed "pressure-spray" oiling system, which provides the chain with a constant supply of fresh clean oil under pressure, the entire system being enclosed and sealed to prevent any contamination of the oil by mud, grit, or water; (2) double cut-tooth sprockets machined to a precision to match that of the chain; (3) the spooling drum on the "Big Giant" is the largest ever built, a feature that reduces line wear considerably; (4) powerful self-energizing, equalized, compound brakes with micro-sensitive feed-off characteristics, patented adjuster, and conveniently-located lubricating panel, fitted with individual Alemite connections for each main bearing;

H. M. LINGLE, Purchasing Agent, Humble Oil and Refining Co., Houston, Texas.



W. C. CLEMONS, Asst. General Superintendent, Gulf Oil Corporation, Texas Division, Houston, Texas.

W. E. DICKINSON, Petroleum Engineer, Sun Oil Company, Beaumont, Texas.

(5) special alloy heat-treated steel brake rims forged in a seamless band; (6) the brake rims are cooled by an enclosed water-pressure system that circulates the water through the drum shaft to the rims, each receiving a constant fresh supply of cooling water; and (7) large shafts capable of taking any load to which they may be subjected. Line and drum shafts are mounted on heavy-duty Hyatt roller bearings in self-aligning housings.

Ideco 27½-in. and 23-in. bobtail oilbath rotaries. The Ideco 27½-in. and 23-in. bobtail oilbath rotaries incorporate the most modern design plus several outstanding features. The construction features are as follows: (1) the rotary base and all heavily stressed castings are of chrome nickel-alloy base; (2) the rotary is equipped with a low, perfectly flat table completely encircled by a heavy cast-steel guard having a non-skid surface; (3) the main bearing races are hardened by a special process to more than 600 Brinell; (4) the pinion shaft is mounted in two self-aligning S K F combination radial and thrust bearings that allow a universal movement of the pinion shaft; (5) the pinion shaft drive sprocket is of chrome nickel heat-treated steel with machine-cut teeth; and (6) the lubrication is fully enclosed oilbath. The bearings and gears are sealed to insure no contamination of the lubricant by mud or other foreign substances. Any matter that might get into the oil will be carried to a deep oil sump and filtered out. The pinion shaft bearings are enclosed in a "capsule" entirely separate from the housing of the table bearing, and each of these has its own separate oil reservoir.

The 27½-in. rotary has a dead load capacity of 300 tons, which allows it to handle easily the maximum depth of present-day drilling.

Ideco "Super Duty" Crown and Traveling Blocks. The Ideco "Super Duty" rotary blocks are designed for use in drilling deep wells, and have proven their ability to do so by their constant use under severe conditions. The traveling block is streamlined, and is designed to prevent overturning or fouling of the line when the block is lowered. The sheaves and bearings are interchangeable between the crown and traveling block. The bearings are heavy duty roller bearings (O.D. of inner race, 8½ in), lubricated through Alemite fittings in the end of the center pin. The crown block is designed in such a way that the large end pins carry a portion of the load, giving the blocks an added amount of strength and rigidity.

Ideco 6-in. and 8-in. oilbath swivels. The Ideco oilbath swivels incorporate the most modern swivel design, the following being the most notable features: (1) automatic spring-type wash pipe packing that eliminates constant adjustment, lubricated through conveniently located Alemite fittings; (2) special heat-treated alloy steel wash pipe hardened to resist wear; (3) ample bearing capacity, both radial and thrust, for the greatest loads at the highest drilling speeds. The main bearing is a self-aligning SKF combination radial and thrust bearing; (4) oilbath lubrication for bearings. Swivel body has an unusually large oil capacity; and (5) standard A.P.I. connections.

Ideco differential kelly drive—"Speeder Upper". The new Ideco "Speeder Upper" is a kelly drive in which the roller bushing that drives the kelly rotates at a speed of 2½ times that of the rotary table, enabling the driller to speed up drilling time without running the rotary and engine at more

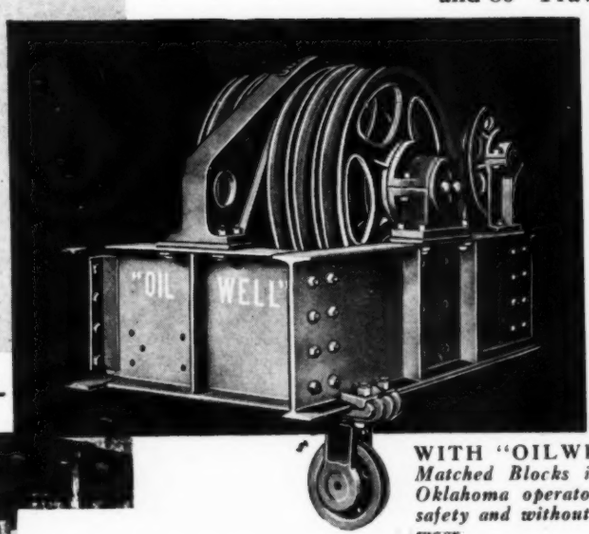
MODERNIZE YOUR ROTARY RIGS

IMPORTANT advantages of "OILWELL" Blocks:

- ★ Large diameter closely-spaced manganese steel sheaves reduce wire-line wear.
- ★ Center truss, exclusively "OILWELL", eliminates center pin deflection and distributes the load equally over the water table.
- ★ Streamlined and carefully balanced construction of the traveling blocks permits high speeds with safety.
- ★ Full rated capacity with large factor of safety.
- ★ Individually lubricated heavy-duty roller bearings.
- ★ Sheaves and bearings of crown and traveling blocks of comparative rating are fully interchangeable.

Medium-heavy service — No. 200 Crown Block and 66" Traveling Block.

Extra-heavy service — No. 300 Crown Block and 80" Traveling Block.



WITH "OILWELL" *Heavy-Duty Matched Blocks in the derrick, this Oklahoma operator "speeds-up" with safety and without excessive wire-line wear.*

OIL WELL SUPPLY COMPANY

Subsidiary of United States Steel Corporation

Branch Stores in All Oil Fields

"OILWELL"

than ordinary speeds. The "Speeder Upper" is handled in the same manner as an ordinary roller drive bushing, and will fit any make of rotary. The drive is enclosed and the gears and bearings operate in a bath of oil. The working parts are sealed to prevent either the oil from leaking or any mud or water from getting into the gears and bearings.

Pumping equipment will be shown in operation. Included will be the Ideco DG-550 vertical geared power with multi-cylinder gas engine drive. Horsepower capacity is 50 at 20 s.p.m., A.P.I. rating. The vertical geared power includes gear box with herringbone gears, split bronze renewable main bearings, roller type pinion bearings, brake with flywheel and brake operating levers. From this unit will take off two push and pull pitmans and two Norris counterbalance stroke posts and two underpull pumping jacks.

Another geared pumping machine, the DT-115, double-reduction-twin cranks, also will be shown. This unit is driven by a multi-cylinder gas engine and has an A.P.I. rating of 15 hp. at 20 strokes per minute. The unit includes gear box with herringbone gears; split bronze renewable main bearings; roller-type intermediate and high speed shaft bearings; two split hub cranks for Ideco rotary counterbalance; tapered wrist pins with nuts and cotters; self-aligning, totally enclosed upper (Type "UB") and lower (Type "LB") bronze bushed wrist pin bearings, fitted with oil chambers; self-aligning twin pitmans, latch type housing on lower bearing; tripod samson post; totally-enclosed oil-bath "pivoted" center irons. (Type "PV"); Type "P" walking beam with "pivoted" equalizing cross beam and hinged-type mule head; polished rod grip equipped with double working cables and double emergency cables; shoe-type brake with fly-wheel and brake operating levers; and Ideco Type "G" counterbalance body castings with bottom weight elements.

Representatives: Richard R. Bloss, Beaumont, Texas, president of International Derrick and Equipment Company of Texas; L. J. Brown, Columbus, Ohio, president of International-Stacey Corporation; C. R. Athy, Columbus, Ohio, chief engineer and advertising manager; L. L. Powell, Houston, Texas, manager Gulf Coast Division; and E. H. Eddleman, Dallas, executive vice-president and general sales manager of the Mid-Continent and Rocky Mountains districts of International Derrick and Equipment Company of Texas.

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INTERNATIONAL EQUIPMENT COMPANY

Boston, Massachusetts

Exhibiting with W. H. Curtin & Co.

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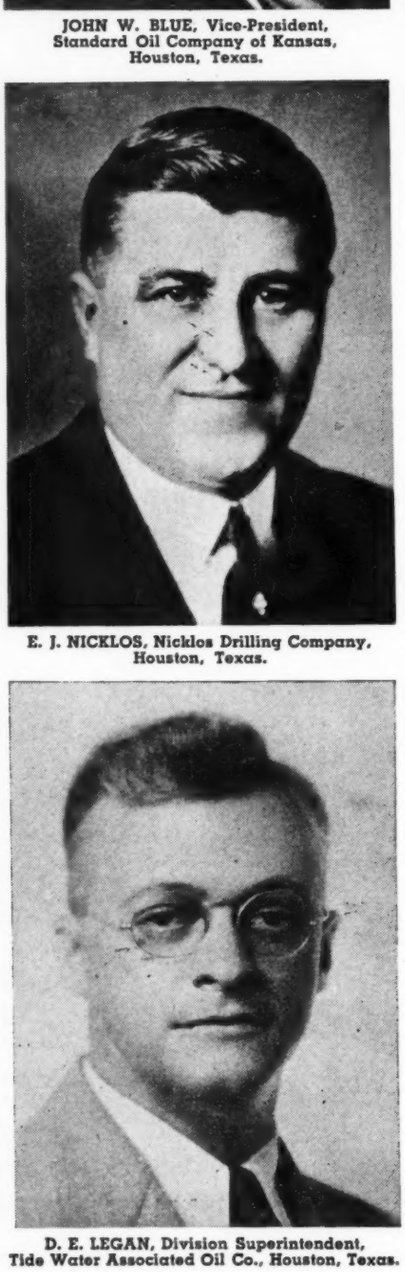
INTERNATIONAL HARVESTER COMPANY

Chicago, Illinois

Exhibiting with Browning-Ferris Machinery Company.

JOHN W. BLUE, Vice-President, Standard Oil Company of Kansas, Houston, Texas.

E. J. NICKLOS, Nicklos Drilling Company, Houston, Texas.



D. E. LEGAN, Division Superintendent, Tide Water Associated Oil Co., Houston, Texas.

THE INTERNATIONAL NICKEL COMPANY, INC.

New York, New York

Booths Nos. 109, 111, and 113

EXHIBIT: Display will be designed to show in a general but comprehensive way the extent to which alloys of nickel are employed in the production and refining branches of the petroleum industry. It is planned to have very few actual exhibits of oil tools or parts, but there will be a flow chart of the industry on the background, having electrical animation, which will show what alloys of nickel are employed and where they are used.

Representatives: H. S. Lewis will be in charge of the exhibit. Other members of the organization present will include J. S. Vanick, Development and Research Division; B. B. Morton, Development and Research Division, specializing in refinery problems; A. G. Zima, Pacific Coast representative, specializing in production problems; E. A. Turner, Monel and Rolled Nickel Sales Department; also representatives of distributors in the Mid-Continent territory.

•

J

JAEGER MACHINE COMPANY

Columbus, Ohio

Exhibiting in Browning-Ferris Machinery Company section.

•

JEFFERSON UNION COMPANY

New York, New York

Norvell-Wilder Supply Company section

EXHIBIT: Jefferson unions recommended for 300 lb. WSP; Stanco unions recommended for 250 lb. WSP; Duplex brass-to-brass seated unions recommended for 300 pounds; and flange unions recommended for 300, 500, and 1000 pounds.

Representative: C. Walter Heltzen.

•

THE JEFFREY MANUFACTURING COMPANY

Columbus, Ohio

Booths Nos. 1214, 1216, and 1218

EXHIBIT: Will display a Jeffrey shale shaker, belt idler, constant-weight feeder, electric vibrating feeders, oil well chains and transmission machinery.

Representatives: L. E. Brill, Columbus, manager Product Sales Division; C. R. Heller, Columbus, vice-president and conveyor sales manager; N. E. Salsich, Columbus, vice-president and general sales manager; and Tom Burke, Dallas, Texas, branch office manager.

PLAY SAFE . . . WITH THESE 3 ACES IN THE HOLE!

YOU have swelled the "pot" with time and expense before you are actually ready to drill and set casing in your well. Here's where you will be "sitting pretty" if you have three aces in the hole. NATIONAL Seamless Drill Pipe, Casing, and Tubing are ready to meet the most difficult situations whenever the "call" comes for a show down.

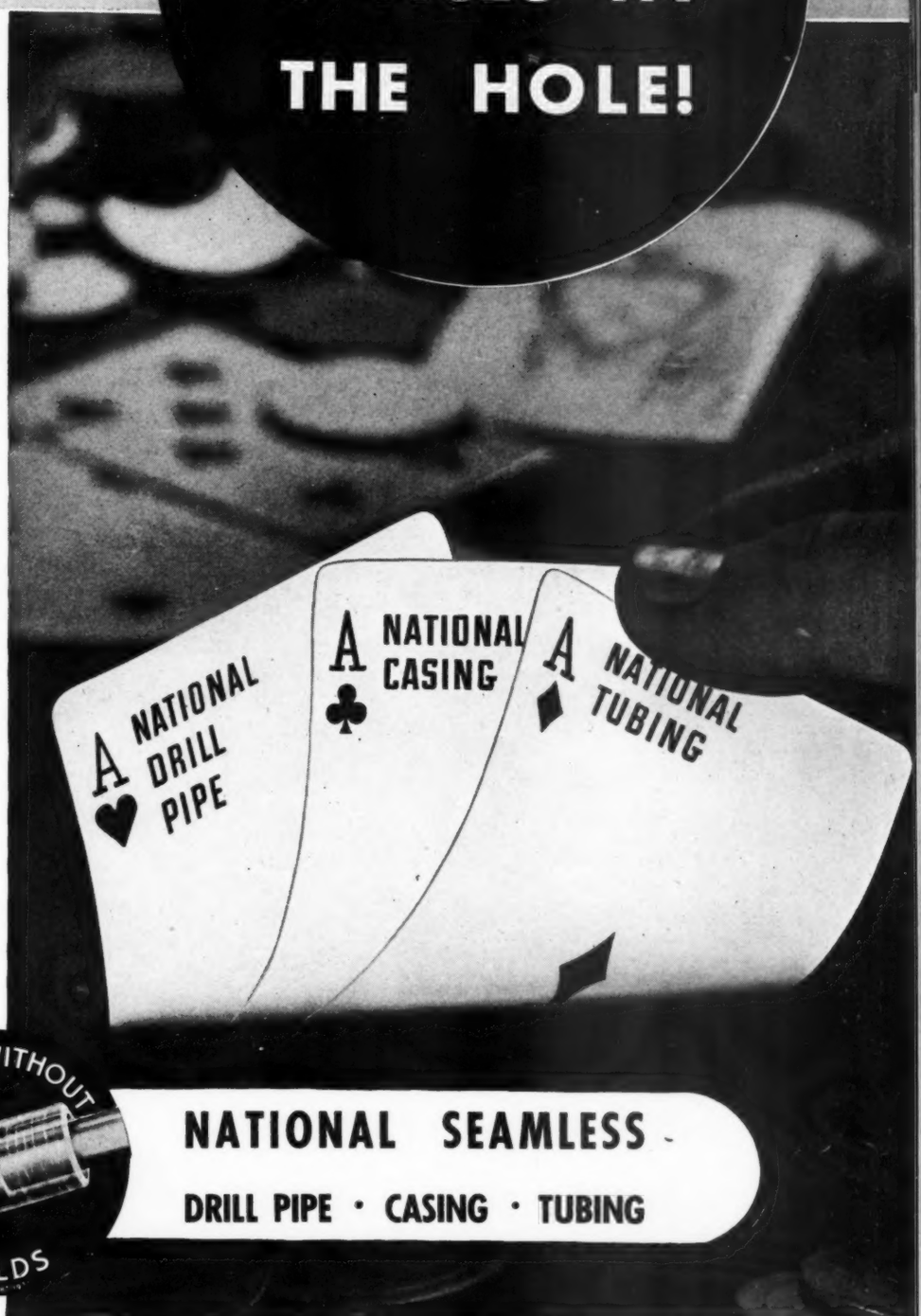
When you're in the game, play safe with these three aces:—

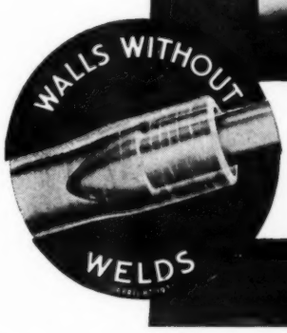
1. National Seamless Drill Pipe. Its remarkable strength, unusual toughness, exceptional ductility, and superior threads have proved beyond question that it will stand up when the going is tough.

2. National Seamless Casing. It has uniform wall-strength because it is pierced from solid steel — it has no welds. "NATIONAL" A. P. I., D. B. X. and D.B. 8 joints are accurately made, so they stab easily and screw together smoothly.

3. National Seamless Tubing. Stays tight after many pulling jobs. With upset ends, it gives long service in heavy pumping wells.

For profitable drilling, casing, and tubing of wells, play safe with these 3 Aces in the Hole — NATIONAL Seamless . . . America's Preferred Drill Pipe, Casing, and Tubing.





NATIONAL SEAMLESS
DRILL PIPE · CASING · TUBING

NATIONAL TUBE COMPANY

PITTSBURGH, PA.

United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

JENKINS BROS.
New York, New York

Booths Nos. 233 and 235

EXHIBIT: A complete line of Jenkins bronze, iron, and steel valves featuring types and patterns of particular interest to all branches of the petroleum industry.

Representatives: H. J. Barnsley, engineer; W. Boyce White, sales representative; and F. J. Klemann, sales representative.

•

JOHNS-MANVILLE
New York, New York

Booths Nos. 618 and 620

EXHIBIT: A wide variety of products that serve the oil industry will be featured. Included in the display will be insulations and refractories, brake linings, packings and materials for the protection of underground pipe lines. Other J-M products to be shown are Celite Filter-Aids, used in the clarification of lubricating oils; Transite Asbestos-Cement pipe for salt-water disposal; and corrugated and flat transite asbestos sheets for industrial roofing and siding, and for furnace casings.

Representatives: J. S. Carroll, vice-president, Johns-Manville Sales Corporation; J. A. O'Brien, assistant general sales manager of Power Products and Industrial Department; F. W. Hodson, T. E. Gossett, S. L. Organ, and L. H. Maier, all of the Houston, Texas, office; and T. C. Greenwood, of the St. Louis, Missouri, office.

•

JOHNSTON OIL FIELD SERVICE CORPORATION
Houston, Texas

Booths Nos. 1317 and 1319

EXHIBIT: The exhibit will be presented jointly by the M. O. Johnston Oil Field Service Corporation of California and the Johnston Oil Field Service Corporation of Texas, and will show the latest type of equipment for the testing of oil and gas wells.

Representatives: Blaine Johnston, J. L. Johnston, and E. C. Johnston, of the Johnston Oil Field Service Corporation of Texas; and M. O. Johnston, Frank O'Neill, and W. F. Bettis, of the M. O. Johnston Oil Field Service Corporation of California.

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THE S. M. JONES COMPANY
Toledo, Ohio

Booths Nos. 1103 and 1105 (Tent)

EXHIBIT: Will consist of a continuous moving picture short taken from our new moving picture, "Progress in Sucker Rods." This short will show briefly the important things covered in the main movie outlining various steps that have been developed in recent years for the betterment of production results from sucker rod pumping and covers four principal phases of activity: field engineering, manufacturing, production research, and care and handling of sucker rods.

Representatives: P. C. Jones, president; H. K. Browning, sales manager; L. J. Pundt, division manager; and C. E. Buchner, district representative.

GEO. H. ECHOLS, Drilling Contractor, Houston, Texas.

FRANK WILSON, Division Purchasing Agent, Sun Oil Company, Beaumont, Texas.

CARL YOUNG, Division Purchasing Agent, Stanolind Oil and Gas Co., Houston, Texas.

•

JONES AND LAUGHLIN STEEL CORPORATION
Pittsburgh, Pennsylvania

Booths Nos. 564, 664, 665, 666, 756, 719, and 721

EXHIBIT: Centered in the colorful 50-ft. background of the J & L exhibit will be a working model of an open hearth steel furnace. Built to scale in every detail, this unique model depicts the actual operation of tapping a heat of steel from one of the J & L tilting open hearth furnaces. On either side of this model steel furnace, illuminated murals will present the J & L quality story, "Every Fifth Man Your Man," showing that out of every five men employed in the J & L Seamless Tube Mills, one of these men is an inspector who constantly checks every feature during the manufacture of the pipe for accuracy to specifications.

Before this colorful background, J & L will exhibit complete line of their oil country tubular goods. On display will be specimens of J & L seamless drill pipe, casing, tubing, and line pipe, with wall areas cut away to permit close examination of threads and wall thicknesses as well as contour and length of the upset formed on some of the tubular products. In addition, there will be an exhibit of J & L Hot rolled seamless steel boiler tubes, which are made by an exclusive method of manufacture wherein the steel is formed into a tube in one continuous operation by a series of forging actions. Displays also will be shown of J & L standard pipe, both seamless and welded, oil containers and cans made of J & L Tin Mill Products, and oil drums made of sheets rolled on the new J & L $25,000,000 96-in. Continuous Strip and Sheet Mill.

In attendance at the J & L exhibit will be representatives from the sales, technical, and manufacturing departments of the corporation.

•

JOYCE-CRIDLAND COMPANY
Dayton, Ohio

Booths Nos. 719 and 721

EXHIBIT: Display will consist primarily of jacks for oil field use.

Representatives: Huston Brown, vice-president and sales manager; and Harry B. Burlow, manager of industrial jack sales.

Up through the steel meshes of this oil derrick—Look! What do you see?

From drawworks to crown block, and back again, you see "Flex-Set" Preformed Yellow Strand.

You know that the cable on a rotary rig must be tough—must take it on the chin, and like it. In fact, you know that the only cable that will ever give genuinely economical service is the very best cable you can buy.

That is why oil producers are looking up—up toward higher and higher quality. And they are getting it in "Flex-Set" Preformed Yellow Strand.

Preforming the wires and strands of an already excellent cable has produced new properties that no one cable of standard type has ever possessed—limpness and flexibility without loss of strength, and remarkable resistance to kinking, drum crushing and fatigue.

Looking up through your rotary rig, and seeing "Flex-Set" Preformed Yellow Strand doing the heavy work, is proof positive that the economy of your operation is also looking up.

BRODERICK & BASCOM ROPE CO., ST. LOUIS

Houston Branch: 1311 Palmer Street, Houston, Texas

U-16R1

THE CONTINENTAL SUPPLY CO. Mid-Continent and Rocky Mountain Distributors

"Flex-Set" Preformed YELLOW STRAND

K

KARGL AERIAL SURVEYS, INC.
San Antonio, Texas

Booth No. 1327

•

KEASBEY & MATTISON COMPANY
Ambler, Pennsylvania

Booths Nos. 925 and 927

EXHIBIT: Products featured will be packings of various types, asbestos-magnesia insulations for oil refinery needs, and asbestos-corrugated sheathing.

The display itself will consist mainly of photographs of oil refinery installations of various types of asbestos-magnesia insulations. The insulation featured to the greatest extent will be Hy-Temp Combination, efficient up to 1900 deg. fahrenheit. Hy-Temp Combination consists of an inner core of Hy-Temp and an outer core of "Featherweight" 85 percent Magnesia. The inner core of Hy-Temp serves to protect the outer core of "Featherweight" 85 percent Magnesia from excessive temperatures as "Featherweight" 85 percent Magnesia itself will not withstand temperatures above 600 deg. fahrenheit. Hy-Temp Combination is available in pipe and block form. The "Featherweight" 85 percent Magnesia also will be featured, particularly in block form for the insulation of stills.

Representative: H. W. Davis, Houston, Texas, district sales manager.

•

KENNEDY VALVE MANUFACTURING COMPANY
Elmira, New York

Exhibiting with Norvell-Wilder Supply Company.

•

KEROTEST MANUFACTURING COMPANY
Pittsburgh, Pennsylvania

Booths Nos. 444, 446, 448, 545, 547, and 549

Exhibiting with Gray Tool Company.

Representatives: W. G. Swaney, H. C. Potts, "Shep" Miers, Cliff Trees, Clyde Alexander, and J. D. Isaacks.

•

KIMBLE GLASS COMPANY
Vineland, New Jersey

Exhibiting with W. H. Curtin & Co.

•

M. M. KINLEY COMPANY
Houston, Texas

Booth No. 265

EXHIBIT: Calipers, underground detector, and sand line gun.

Representatives: M. M. Kinley and Frank Hangst.

H. C. CHRISMAN, Superintendent, Pure Transportation Co., Rayne, Louisiana.

C. R. BAYLESS, Electrical Engineer, Gulf Oil Corporation, Texas Division, Houston, Texas.

R. B. McLAUGHLIN, Secretary and Treasurer, The Texas Pipe Line Co., Houston, Texas.

KINZBACH TOOL COMPANY, INC.
Houston, Texas

Booths Nos. 355 and 357

EXHIBIT: The following tools will be on display: whipstock, milling tool, pony rod eliminator, automatic line wiper, pressure hookup for wire-line operation, and releasing overshot.

Representative: R. B. Kinzbach.

•

KOPPERS COMPANY
Baltimore, Maryland

Booths Nos. 501 and 502

EXHIBIT: Piston rings of the American Hammered Piston Ring Division, and Fast Flexible couplings of the Bartlett Hayward Division, will be displayed.

Representatives: John A. Worthington, Joe M. Fuller, E. S. Freeman, Jr., Bart Aldridge, Daniel DeButts, W. P. Cunningham, and Harry Nolan.

•

KUNKLE VALVE COMPANY
Fort Wayne, Indiana

Exhibiting with Allen, Sproull & Allen.

•

L

LANDIS MACHINE COMPANY
Waynesboro, Pennsylvania

Booths Nos. 551, 553, and 555

EXHIBIT: Included in the exhibit will be a 13⅜-in. Receding Chaser Pipe Machine. This machine is a heavy-duty production machine for threading drill pipe and casing. Shown also will be a 2-in. Landmaco Leadscrew Machine. The Landmaco is a hand-operated machine for threading rods, bolts, etc. The remainder of the exhibit will include a display of the company's entire line of die heads and collapsible taps. These heads and taps are used extensively in the manufacture of equipment used in the oil fields, such as sucker rods, tool joints, float collars, column couplings, etc.

Representatives: C. N. Kirkpatrick, sales manager of the Landis Machine Company; and R. G. Mumma, manager of the Tap Division, will be in charge. J. R. Funk, Texas representative, and Roy Stoner, factory representative, also will be in the booths to operate the machines on display.

•

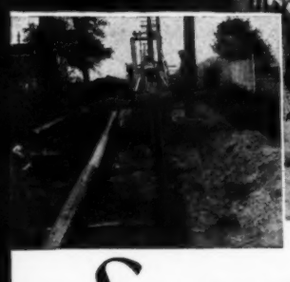
THE LANE-WELLS COMPANY
Los Angeles, California

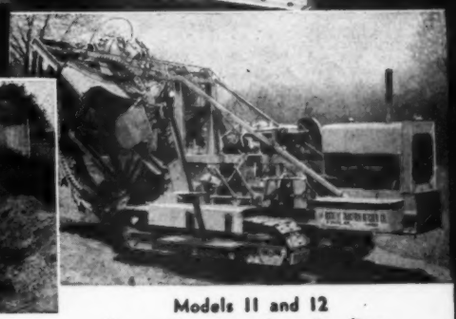
Booths Nos. 645 and 647 (Inside)
1015 (Outside)

EXHIBIT: The Anderson Well Survey Division of Lane-Wells Company will display the various Anderson well-survey and directional control devices. Moving pictures will be shown of the Anderson Services

Model 48 — the pipeliner for all large main line trenches.

Buckeye DITCHERS and EXCAVATORS





Models 11 and 12
for small main and service lines.

Buckeye Clipper

with METERED VACUUM CONTROL

"Give an Operator a Machine He Likes and He Will Give You Yardage That Pays."

Here's a machine that piles up big yardage without calling for marathon endurance from the operator.

METERED VACUUM CONTROL speeds up digging by making every swing of the dipper fast and accurate. Fingertip pressure by the operator commands instant response from the machine.

Convertible

SHOVELS—CRANES—TRENCH HOES—CLAMSHELLS—DRAGLINES

The BUCKEYE TRACTION DITCHER CO., FINDLAY, OHIO

The Buckeye Clipper Convertible Excavator is Buckeye's newest answer to the problem of economical and efficient earth removal.

Save you money ON ANY TYPE-SIZE OR LENGTH OF *ditching job.*

New Modern models for every trench requirement, give you the last word in engineering for speed, accuracy, reliability and final economy.

As originators of the wheel type ditchers and builder of the equipment used on the most important pipe lines the world over, we offer you the experience of a third of a century in pipe line excavation equipment — the kind of experience that results in profits to you.

Buckeye ditchers have dug the trench for more miles of pipe line than all other makes of ditchers in the world — and today, more Buckeye Ditchers are in operation than any other ditchers built.

Buckeye has the answer to every ditching problem. It will pay you to consult our engineers before you start any ditching project, large or small.

THE BUCKEYE TRACTION DITCHER COMPANY

• FINDLAY, OHIO •

Builders of Excavating Equipment for over 1/3 of a Century

and of the Lane-Wells Gun Perforator in action. Interesting working models will be shown. Another feature of the Lane-Wells indoor exhibit will be a working model of Stratagraph, the modern method of electrical coring through casing. This service is operated by Lane-Wells outside California, under license from Oil Well Water Locating Company. In the outdoor space will be a completely equipped gun-perforator truck on display.

Representatives: E. R. Smith, Houston, Gulf Coast manager of Lane-Wells, will be in general charge of the exhibit, assisted by a staff of sales engineers and operators. The Alexander Anderson Division exhibit will be in charge of Norman L. Dorn, manager; Ralph Hendrickson, chief engineer; and James W. McPhee, sales engineer.

•

LARKIN PACKER COMPANY

St. Louis, Missouri

Booths Nos. 308 and 310

EXHIBIT: The following equipment will be on display: swage nipples, bull plugs, guide shoes, float shoes, float collars, casing shoes, back-pressure valves, shoe guides, lead seal "J" tools, casing and anchor clamps, spiders, casing heads, and packers.

Representatives: J. J. Larkin, president; W. H. Larkin, vice-president; C. F. Dougherty, district manager; C. H. Watson, T. R. Wimbish, T. E. Alexander, T. J. Spikes, and J. J. Dailey.

•

THE LAYNE & BOWLER COMPANY

Houston, Texas

Booths Nos. 459 and 461

EXHIBIT: The following items will be on display: wire-wrapped well strainers, slotted pipe well strainers, set shoes, back-pressure valves, guide plugs, liner packers for drill stem setting, and liner packers for tubing setting.

•

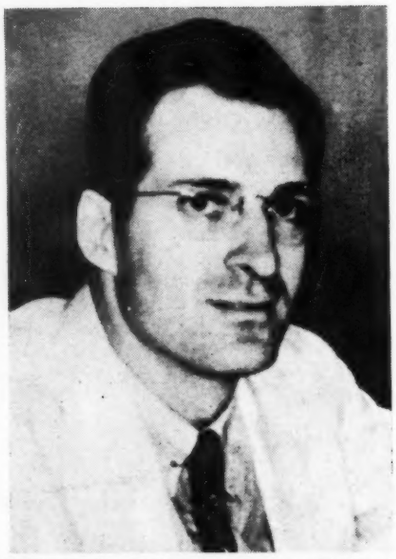
LEBANON STEEL FOUNDRY

Lebanon, Pa.

Booths Nos. 1405 and 1407

EXHIBIT: Steel castings in the rough, of regular carbon steel, chromium-molybdenum alloys, nickel steel, as well as stainless steel castings. The castings represented will be those employed in the oil industry generally, such as valve castings for refinery and field use, pump case castings of various types, regulating valve bodies, drill bit castings, slips, etc.

Representatives: W. H. Worrilow, president; A. J. McDonald, vice-president in charge of sales; P. E. Gerhard, sales engineer; and Charles H. Folwell, Jr., Texas representative.



JOHN ECKLE, Assistant Equipment Engineer, Humble Oil and Refining Co., Houston, Texas.

F. C. CHANNEL, JR., Production Engineer, Union Sulphur Company, Sulphur, Louisiana.

H. E. SMITH, Auditor, Apex Construction Co., Houston, Texas.

LEEDS & NORTHRUP COMPANY

Philadelphia, Pa.

Booth No. 426

EXHIBIT: Micromax electric control. This automatic control, completely engineered and manufactured by L&N and used extensively on temperature control problems, will be in operation to show a new method of temperature control for multiple-hearth clay-burning furnaces. By using a Rayotube sighted on the material in the furnace (rather than the usual thermo-couple), control is obtained directly from the temperature of the clay. In addition to the above, a cabinet-mounted L&N temperature indicator with switches, a multiple-point multicolor Micromax temperature recorder, and several portable L&N measuring instruments will be demonstrated.

Representative: R. E. Hansen.

•

A. LESCHEN & SONS ROPE CO.

St. Louis, Missouri

Booth No. 217

EXHIBIT: The principal part of the exhibit will consist of a complete line of samples of wire rope manufactured by the company and used in the various branches of the oil and gas industries.

Representatives: L. E. Dressler, LeRoy Weyler, and E. E. Lambert.

•

M. J. LEWIS OIL WELL SERVICE

Houston, Texas

Booth No. 1208 (Tent)

EXHIBIT: On display will be the Lewis knuckle-joint and other directional drilling tools, together with a new bit that the company is just starting to manufacture, the trade name of which is the Tarwin Bit.

Representatives: M. J. Lewis and Ross Bassinger.

•

LINCOLN ELECTRIC COMPANY

Cleveland, Ohio

Exhibiting with the Big Three Welding Equipment Company.

•

LINK-BELT COMPANY

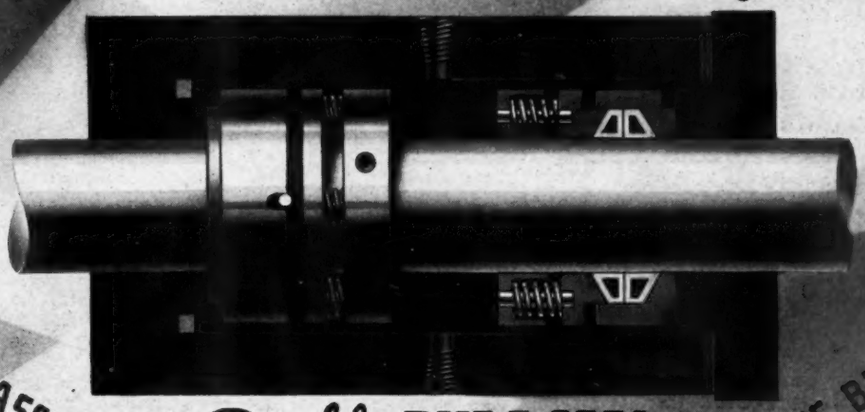
Chicago, Illinois

Booths Nos. 416, 418, and 420

EXHIBIT: The display will consist of a Link-Belt mud screen in operation; an operating chain drive unit incorporating the various types of chains used on drilling rigs. The unit will be so arranged that any one of the drives can be operated separately or all at one time. A complete line of Link-Belt rotary drilling chains, silent chains and roller chains will be displayed on a panel and popular sizes of power transmission items used by the industry also will be exhibited. Brilliantly illuminated pictures of various installations will form part of the background. The color

DURA SEAL

A MECHANICAL SEAL *that Rotates with the Shaft*



Double DURA SEAL

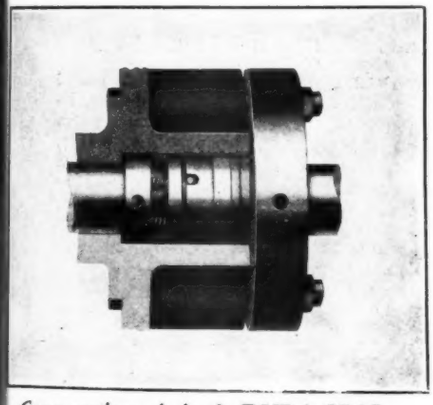
THIS ASSEMBLY GIVES PERFECT SEALING FOR PROPANE, BUTANE AND OTHER LIGHT ENDS OF PETROLEUM

RESISTS CORROSION

DURA SEAL may be made of many different materials. It is not limited in this respect as are ordinary packings. Therefore, it can be constructed to resist corrosion by almost any liquid used in industry.

GRIT-PROOF

DURA SEAL sealing faces form a perfect ground joint. Properly applied, no abrasives of any kind can lodge between them. No wear on shaft or sleeve. Great reduction in friction eliminates fire hazard.



Cross section of single DURA SEAL—*inside assembly—for most conditions.*

DURA SEAL INSTALLATIONS PERFORMING NOTABLE SERVICE

- ★ Centrifugal pumps working Propane from —40 deg. F. to 130 deg. F., 2⅞-in. shaft. 3600 r.p.m. Pressure 325 lbs. Absolute sealing. Six months. Continuing.
- ★ TEN MONTHS on solution of 10% sulphuric acid, 35% solids including clay, 55% water. Saving of $54.00 every 29 days over ordinary packings.
- ★ CAUSTIC SODA—Three years' service. Strengths 10% to 50%.
- ★ OLEUM LIVER (sulphuric acid sludge)—Eleven months. Continuing.
- ★ SULPHURIC ACID—93%. Average service one year.
- ★ PHENOL and WAXY LUBRICATING OIL—160 lbs. pressure. 3600 r.p.m. 600 deg. F. Average service more than a year.

Write for Specification Sheets on which to submit your Packing Problems

PACKING
ENGINEERING SERVICE
CHEMICAL AND MECHANICAL
OUR SPECIALTY

DURAMETALLIC
KALAMAZOO *Corporation* MICHIGAN

IT COSTS NOTHING TO
GET OUR RECOMMENDATIONS
ASK TO SEE
OUR REPRESENTATIVE

SEE OUR EXHIBIT AT THE HOUSTON SHOW—OCTOBER 11-16, BOOTH NO. 409

scheme of the entire exhibit has been given considerable thought and the entire arrangement will make a harmonious display.

Representatives: Fred Wallace, Houston; W. H. Abele, Oklahoma City; Robert Horton, Houston; R. C. Brown, Houston; C. R. Weiss, Indianapolis; C. W. Spalding, Indianapolis; F. S. O'Neil, Indianapolis; H. L. Strube, Philadelphia; and A. H. Boike, Chicago.

•

LONE STAR CEMENT CORPORATION

Dallas, Texas

Booth No. 748

EXHIBIT: An animated replica of bottomhole conditions as they relate to the cementing of oil wells.

Representatives: J. E. Mifflin, H. A. Williams, J. B. Roberts, and E. E. Knott.

•

LUCEY BOILER & MANUFACTURING CORPORATION

Chattanooga, Tenn.

Exhibiting with Houston Oil Field Material Company.

•

LUFKIN FOUNDRY & MACHINE CO.

Lufkin, Texas

Booth No. 1012-A (Outside)

EXHIBIT: Displaying a complete line of Lufkin pumping units, all of the units operating with prime movers, either electric motor or gas engine.

Representatives: Exhibit will be in charge of C. B. Edwards, Houston district manager, and all sales representatives will be on hand at various times.

•

LUFKIN RULE COMPANY

Saginaw, Michigan

Booths Nos. 1100, and 1201

•

THE LUNKENHEIMER COMPANY

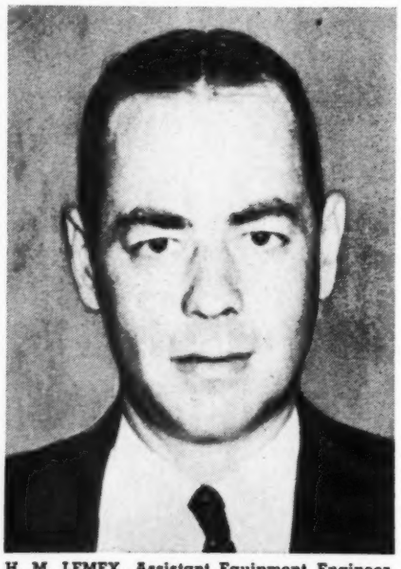
Cincinnati, Ohio

Booths Nos. 208 and 210

EXHIBIT: Display will include a complete line of bronze, iron, and steel valves, boiler mountings, lubricating devices, and other specialties suitable for oil field and refinery service. Featured in the exhibit will be the new line of bronze globe, gate, and check valves rated at 350 lb. SP and 1000 lb. GLP for oil-well drilling operations and high-pressure gas, oil, and hydraulic service, and steel valves for similar services. Of special interest will be the new lines of plug type "Ferrenewo" and "Renewo" valves, 150 to 300 lb. SP, with "NS5" alloy seats and discs of great hardness to resist galling, abrasion, erosion, and corrosion.

W. F. FULTON, Chief Chemist and Supt. Gasoline Plants, United Gas System, Houston, Texas.

O. L. FISHER, District Production Supt., Continental Oil Company, Basile, Louisiana.



H. M. LEMEX, Assistant Equipment Engineer, Humble Oil and Refining Co., Houston, Texas.

Also of interest will be the line of corrosion resistant valves—"Causul" metal gates, "SA" valves, all-iron "Ferrenewo", all-iron "King-clip", and the iron automatic liquid gauge with stainless steel trim. Other products on display include the "Alvor" constant level oil control, a device for maintaining the proper oil level in ring-oiled bearings; non-metallic disc valves; new air nozzles; steel needle valves, etc.

Representatives: Harry A. Burdorf, sales manager; Jos. Waldeck, sales representative; Jos. A. Birkhead, sales representative; and M. N. Stickel, sales representative.

•

LYCOMING MANUFACTURING COMPANY

Williamsport, Pa.

Booths Nos. 1123 and 1125

EXHIBIT: On display will be a Dual engine-driven generator plant, and a AG6-S 6-cylinder gas engine, sectioned to show all working parts. The Dual engine-driven generator plant probably will be a 40-kw. unit and will be operating.

Representatives: E. D. Herrick, J. T. McFarland, W. G. Durant, G. B. Barr, G. P. Wisdom, and Z. H. Whiteman.

•

M

M. & H. VALVE & FITTINGS COMPANY

Anniston, Alabama

Exhibiting with Allen, Sproull & Allen.

•

MacCLATCHIE MANUFACTURING COMPANY

Compton, California

Booths Nos. 1204, 1206, 1305, and 1307

EXHIBIT: The company's complete line of oil-field equipment will be on display, including pump liners and pistons, piston rods, flow nipples, pump valves, pullers, cement heads, quick unions, hydro-seal plug valves, plug valve wrenches, plug valve grease, pressure drilling equipment, blowout preventers, wall scraper, rotary underreamer, straight reamer and hole guide, rotary hose, gearomatic cathead, fingerboard, geared brake, etc.

Representatives: C. F. Whaley, Mid-Continent manager, and his crew of salesmen.

•

MACWHYTE COMPANY

Kenosha, Wisconsin

Booth No. 1215

EXHIBIT: A special display demonstrating the use of the new Macwhyte Siler sling, which is used in the oil fields extensively for handling pipe, casing, reamers, and many other tools, bits, etc., that is loose equipment on the drilling floor. In addition will be shown pictures of this

HEAT-TREATED SCREEN CASING

The difference in price between the best and the poorest screen casing is very small as compared to the total cost of bringing a well up to the producing stage. ● It is even more insignificant when the cost of correcting troubles resulting from the use of improperly selected or inferior screen casing is considered. ● Kobe Heat-Treated Screen Casing is a thoroughly engineered, high quality product that also can be engineered to meet specific requirements of individual wells. The Kobe laboratory and personnel are available to operators at all times for this purpose.

KOBE, INCORPORATED

(Pronounced KŌB)

3040 East Slauson Avenue . . . . . Huntington Park, California

BRANCH OFFICE: 3119 South Robinson Avenue, Oklahoma City, Oklahoma

GULF COAST REPRESENTATIVE: Brown-Hovis, Incorporated, 2214 Campbell Street, Houston, Texas

FOREIGN REPRESENTATIVE: Petroleum Machinery Corporation, 30 Rockefeller Plaza, New York, N. Y.

sling in actual use in a transparency exhibit. Also on display will be numerous kinds of wire lines for drilling.

Representatives: James A. Long, assistant sales manager; and several other representatives of the company, including Robert W. Siler, the inventor of the Macwhyte Siler sling.

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MAINTENANCE ENGINEERING CORPORATION

Houston, Texas

Booths Nos. 608, 610, 612, 709, 711, and 713

EXHIBIT: Products to be displayed are as follows: Unitized oil-field boiler firing control, forged-steel Christmas tree fittings, mud line pressure gauge pulsation dampners, Tube-Turns, Edward valves, Bonney Weldolets and Thredolets, Mason-Neilan regulators, Commercial orifice fittings, Vogt valves and fittings, forged-steel flanges, and National Tube products.

Representatives: C. E. Naylor, W. J. Peddie, L. J. Burda, W. B. Rawson, M. N. Aitken, O. L. Dockum, C. K. Brown, Norman Schwarz, and George Moore.

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D. S. MAIR MACHINERY COMPANY

Houston, Texas

Booth No. 557

•

MALONEY TANK MANUFACTURING CO.

Tulsa, Oklahoma

Booth No. 1012-B (Outside)

EXHIBIT: On display will be two 250-bbl. A.P.I. bolted steel tanks, having A.P.I. walkways and stairways.

Representatives: J. S. Warren, E. G. Murphy, C. W. Stevens, H. H. Swan, and J. C. Highfill.

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MARMON-HERRINGTON, INC.

Indianapolis, Indiana

Exhibiting with Transportation Equipment Company.

•

MARSHALLTOWN MANUFACTURING COMPANY

Marshalltown, Iowa

Exhibiting with J. E. Bobo.

•

MARTIN-DECKER CORPORATION

Long Beach, California

Booths Nos. 130 and 231

EXHIBIT: Martin-Decker "Quintuplex" drilling control instrument; the "Clipper" model weight indicator; non-clog slush pump gauges, both regular and unitized models; pump dynamometer; specially designed gauges used in connection with various instruments; cable tension indicators, etc.

Representatives: E. L. Decker and L. A. Crawford.

R. A. IRWIN, Drilling Contractor, Houston, Texas.

H. F. GOSS, Superintendent Ingleside Refinery, Humble Oil and Refining Company.

C. H. DUNLAP, Equipment Engineer, Humble Oil and Refining Co., Houston, Texas.

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MASON-NEILAN REGULATOR COMPANY

Boston, Mass.

Exhibiting with Maintenance Engineering Corporation.

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MASTER SEPARATOR & VALVE COMPANY

Los Angeles, California

Booth No. 1210

•

McCORD RADIATOR & MFG. CO.

Detroit, Mich.

Booth No. 1315

EXHIBIT: McCord lubricators, McCord unit heaters and engine cooling radiators.

Representatives: W. Powers, sales manager of the Lubricator Division; and J. Lyall, district representative.

•

McCULLOUGH TOOL COMPANY

Los Angeles, California

Booth No. 1322

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J. H. McEVOY & COMPANY, INC.

Houston, Texas

Booth No. 163

•

McNEELY MATERIALS COMPANY

Houston, Texas

Booths Nos. 331 and 333

EXHIBIT: Exhibit will be in conjunction with the Vernon Tool Company, Ltd., for which the McNeely Materials Company is Mid-Continent-Gulf Coast distributors. For details of equipment to be exhibited, see under Vernon Tool Company, Ltd.

Representative: J. W. McNeely.

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MECHANICAL RUBBER COMPANY

Passaic, N. J.

Exhibiting with Continental Supply Company.

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GEO. S. MEPHAM CORPORATION

East St. Louis, Illinois

Booths Nos. 415 and 417

EXHIBIT: The following products will be on display: Colox, Jelox, Meptol, Suspendo Clay, and Chemical "Z".

SUPERIOR SERVICE Wherever you turn!

THE PATENTED CONSTRUCTION of the Chiksan Swing Joint sets it apart from all other types of flexible connections. Its double rows of hardened steel balls not only carry all radial loads, but also maintain a pre-regulated thrust load upon the packing element, keeping it always pressure-tight and leak-proof. The joint cannot bind . . . it cannot get out of adjustment . . . and there's nothing to interfere with free and complete 360 degree swiveling.

Wherever you turn, use Chiksan Swing Joints for superior year in, year out performance!

Chiksan All-Steel Rotary Hose—

Seven Chiksan Swing Joints give seventeen swivel movements to assure complete flexibility. All steel construction means complete safety at all pressures and makes this hose ideal for both pressure drilling and ordinary drilling. Patented Neoprene packing elements are resistant to all petroleum products and assure superior performance, whether circulating with mud or oil. (1)

Chiksan "Poor Boy's" Swivel—

A light auxiliary swivel that has a multitude of uses around a rig. It allows complete rotation in both horizontal and vertical planes, and has a tee connection for running wire line instruments while circulating. (2)

Chiksan Mud Gun—

An engineered mud gun that gives leak-proof rotation in two planes and features a scientifically designed hardened steel nozzle that gives high jet efficiency. (3)

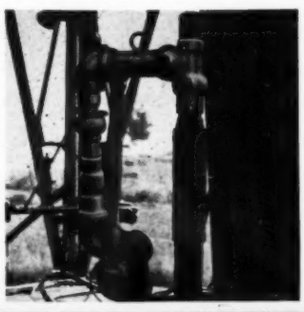
Chiksan Cement Joint—

Used by major cementing companies throughout the oil industry, the Chiksan Cement Joint gives complete safety under extremely high pressures and meets the rigid requirements of today's high pressure cementing jobs. (4)

See this modern, money-saving equipment at the Oil Show, Booths 324, 326, 425, and 427.

CHIKSAN OIL TOOL CO., Ltd.
FULLERTON, CALIFORNIA
Gulf Engineers . . . . . Houston, Texas

2.



3.

4.

CHIKSAN *ball bearing* SWING JOINTS

Representatives: L. K. Ayers, J. A. Coulson, E. F. Brownhill, Jack Winters, R. C. Biering, B. B. Braly, J. H. Beesley, G. J. Geiselman, Jr., Roland F. Hodder, W. P. Lester, J. T. Hancock, Jr., J. T. Patterson, Jr., W. H. Steen, J. E. Campbell, and John Knox Smith.

•

MERCO CENTRIFUGAL SEPARATOR CO., LTD.

San Francisco, Calif.

Booth No. (W-K-M Company Section)

EXHIBIT: Merco Centrifugal Separator for desanding rotary drilling muds.

•

THE MERIAM COMPANY

Cleveland, Ohio

Exhibiting with W. H. Curtin & Co.

•

MID-CONTINENT SUPPLY COMPANY

Fort Worth, Texas

Booths Nos. 202 (Inside); 1001 (Outside)

EXHIBIT: Cummins full-Diesel cold-starting engines, with their exclusive patented fuel system, are featured in the exhibit, which also includes other drilling equipment, pumping and pipe line material, as follows:

Two Model LI-600 Cummins cold-starting full-Diesel 6-cylinder engines, 200 hp. each at 800 r.p.m., 250 hp. each at 1000 r.p.m. powering a Wilson Atlas rotary drilling rig.

Two Model LI-600 Cummins Diesels, same type as above, powering an Allis Chalmers M-2-800 rotary drilling rig.

The new Model "L" V-type 12-cylinder Cummins cold-starting full-Diesel engine, 400 hp. at 800 r.p.m., 500 hp. at 1000 r.p.m.

The Model HP-600 Cummins 6-cylinder full-Diesel cold-starting power unit, 100 hp. at 1500 r.p.m., 150 hp. at 1800 r.p.m.

The Model AMR-6 Cummins 6-cylinder full-Diesel cold-starting marine engine, 85 hp. at 1500 r.p.m., 100 hp. at 1800 r.p.m.

Model HP-600 Cummins full-Diesel cold-starting engine powering Wilson Grant model winch. Unit used for servicing wells.

The Mid-Continent utility unit on pipe skids serving as air tanks, including air compressor, generator, and centrifugal water pump, powered by the new Model A, 4-cylinder Cummins cold-starting full-Diesel engine, 30 hp. at 1200 r.p.m.

Emsco Engineered Rotary Brake Lining, different in principle, proven in operation and which controls abrasive action, prevents scoring without excessive drum wear and delivers smooth, safe braking.

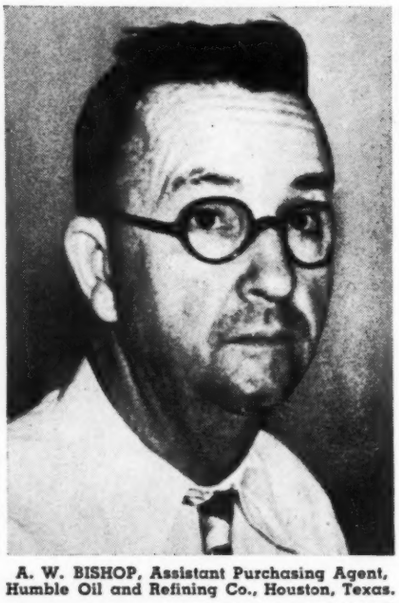
Naylor spiral lock-seam surface casing and line pipe with the exclusive lock-seam structure providing maximum strength with minimum weight and many other features.

Mid-Continent automatic relief valves, without seats or springs, for installation on main pipe lines or on pumps, eliminating excessive pressures caused by surges or improper operation of gate valves.

Ludlow gate valves for the pipe line industry.

Electroloy open-flow check valves and electroloy machinery replacements manufactured by The Locomotive Finished Material Company, Atchison, Kansas. Electroloy is a metal that the makers state assures long life and other advantages. Steel valves and large steel equipment also are made by this manufacturer, represented exclusively by the Mid-Continent Supply Company in the oil country.

J. M. COOPER, Production Engineer, Gulf Oil Corporation, Texas Division, Houston, Texas



A. W. BISHOP, Assistant Purchasing Agent, Humble Oil and Refining Co., Houston, Texas.

F. B. HAVERFIELD, District Foreman, Natural Gas and Gasoline Department, Continental Oil Company, Basile, Louisiana.

Bethlehem A.P.I. normalized sucker rods, manufactured by the Bethlehem Steel Company, who make rods especially designed to handle every type of pumping load.

Pacific Oil Well Liner Pumps and accessories, featuring precision equipment and "Moloy" pump liners designed especially to withstand severe pumping conditions such as sand, high pressures, abrasion, corrosion, temperature, and shock.

Representatives: In addition to various store managers and other representatives, those planning to attend this show are as follows: K. W. Davis, president; D. H. Thornbury, vice president; J. A. Daugherty, vice president; J. C. Halbert, treasurer; F. John, purchasing agent; R. O. Moore, general merchandise manager; H. E. Hamilton, district sales manager; W. I. West, district manager; P. J. Dasey, sales engineer; J. E. Snoddy, sales engineer; C. D. Helm, sales engineer; J. B. Chambers, Southern district manager, Cummins Engine Company; R. C. Tucker, district manager; S. W. Backus, district manager; and F. J. Spurlock, manager pumping equipment sales.

•

MIDWEST PIPING AND SUPPLY CO., INC.

St. Louis, Missouri

Exhibiting with Frick-Reid Supply Corporation.

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MINE SAFETY APPLIANCES COMPANY

Pittsburgh, Pa.

Booths Nos. 313 and 315

EXHIBIT: An attractive exhibit panel upon which will be mounted illustrations of their safety equipment in operation. Among the most prominent products manufactured and sold by the Mine Safety Appliances Company are the Comfo dust and paint respirators (U. S. Bureau of Mines approved); Skullgard protective hats and caps; MSA abrasive masks and air line respirators; Edison Electric cap and hand lamps; gas detecting, analyzing, and recording instruments; hose and canister masks; goggles; first-aid kits and materials; protective clothing; and resuscitation apparatus; and the H-H Inhalator.

Representatives: H. W. Richards, G. J. Gruber, H. L. Phillips, and R. M. Nicholson.

•

MISSION MANUFACTURING COMPANY

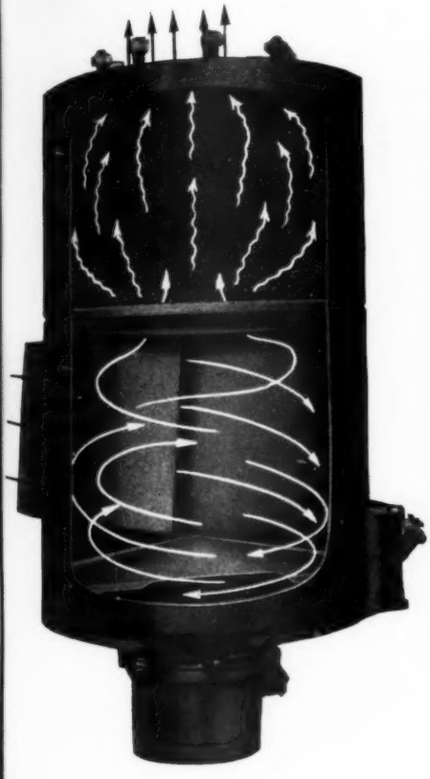
Houston, Texas

Booths Nos. 304, 306, 405, and 407.

EXHIBIT: The following products manufactured by the company will be on display:

New Mission Rotary Slips, Model 36, having the principle of rolling dogs that

When you're at the Oil Show



SEE HOW THREE COMPLETE CLEANINGS SET THE STANDARD IN AIR CLEANING

Efficiency

You are cordially invited to visit our booth, number 656, and look through the windows of a working cleaner model* ... see the oil action set up in the cleaner ... watch the cleaning process and discover for yourself the many advantages offered in Vortox Air Cleaners.

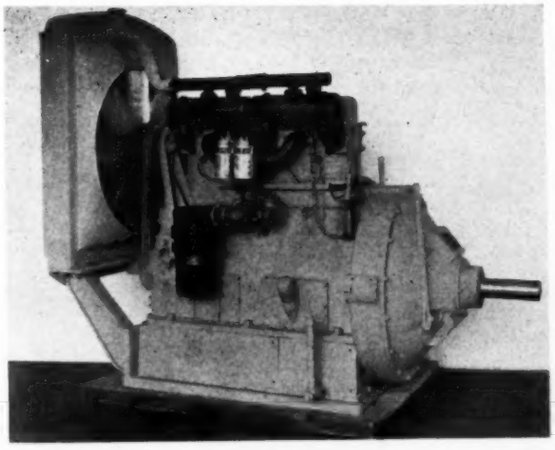
**All sizes and types of Vortox Air Cleaners (for gasoline, natural gas and Diesel applications) will be on display.*

1 The VORTOX TRIPLE-ACTION AIR CLEANER first rapidly whirls incoming air, setting up a cyclonic action that throws out all heavy particles of dust.

2 The whirling air sets up an oil spray which thoroughly scrubs every cubic foot of air and removes most of the fine particles of dust.

3 A crimped wire filter then gives the air a final cleaning besides removing all oil from the air before it passes into the cylinders of the engine.

Vortox maintains its high efficiency day in and day out. There is no removable filter element to become dust clogged, and result in poor engine performance or low efficiency.



THE OIL AND GAS INDUSTRIES ARE USING MORE VORTOX AIR CLEANERS THAN ANY OTHER MAKE

VORTOX MANUFACTURING CO., Claremont, Calif.

VORTOX

OIL TYPE SELF-WASHING AIR CLEANER

the makers state positively eliminates danger of slips cutting or crushing pipe.

A new hinged-type slip that possesses the same general advantages that distinguish the regular Mission slip.

Casing slip for handling larger sizes of pipe than the Mission slips.

Two new tubing slips and spiders (large and small). The Mission Square Bowl Tubing Spider is constructed on the Mission Rolling Dog slip principle.

New Mission Silver Top Valves.

New Mission Valveless Swabs.

New Mission Hose Clamp that is now being tested both in the field and in the Mission testing laboratory where a high-pressure slush pump and other apparatus duplicate field conditions.

Representatives: W. B. Sharp, Dudley Sharp, T. Campbell, Don Garrison, and all officers of the Mission Manufacturing Company.

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LEE C. MOORE & COMPANY, INC.

Pittsburgh, Pa.

Booths Nos. 1308 and 310 (Tent)

EXHIBIT: Booth display: miniature extended leg derrick and sub-structure; also specialty items. Outside display: 129-ft. extended leg derrick with independent substructure.

Representatives: C. R. Krause, C. L. Henry, G. I. Lynch, W. H. Payne, J. C. Donaldson, and J. R. Roberts.

•

MUELLER COMPANY

Decatur, Illinois

Booths Nos. 1232 and 1234

EXHIBIT: Machines for drilling and tapping pipe under high pressure. Equipment for plugging and stopping high-pressure lines under pressure. Steel welding fittings for making valves or connections under pressure in high-pressure lines for stopping off pressure or for bypassing.

Representatives: Frank H. Mueller, chief engineer; George H. Hofmann, representative; W. L. DeWitt, representative; and J. W. Wells, secretary.

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N

NATIONAL BOILER IMPROVEMENT CO.

Washington, D. C.

Exhibiting with Allen, Sproull & Allen.

•

NATIONAL RADIATOR CORPORATION

Johnstown, Pa.

Booths Nos. 359 and 361

EXHIBIT: Display of National condensing and cooling sections, and National Oil-Rators.

L. E. BARROWS, Manager, The Texas Company, Houston, Texas.

W. C. KINSOLVING, Operating Superintendent, East Texas Lines, Sun Pipe Line Company, Beaumont, Texas.

S. A. GIRAUD, Gen. Mgr., Refining, Humble Oil & Refining Co., Houston, Texas.

Representatives: B. T. duPont, manager Cast Products Division; Edward Soph, Tulsa representative; E. W. Jacobi, New York representative; and D. H. Annin, San Francisco representative.

•

NATIONAL SUPPLY COMPANY

Toledo, Ohio

Booths Nos. 121, 123, 125, 127, 129, 131, 133, and 135

EXHIBIT: No equipment will be on display. Booths will contain photographic enlargements of the principle items manufactured by the company.

Representatives: C. C. Cartwright, vice president; C. A. McCollom, division manager; C. R. Patterson, district manager; L. V. Boggs, vice president; A. W. McKinney, manager of sales; J. R. Mahan, chief engineer; and M. T. Archer, director of research.

•

NATIONAL TANK COMPANY

Tulsa, Oklahoma

Booths Nos. 139 and 141

EXHIBIT: A transparent oil and gas separator with latest improvements; National Titeline Coupling display; National Bolted Tank and accessories display; and surface casing display.

Representatives: Floyde L. Senter; L. S. Allen, Tulsa, Oklahoma; S. S. Parker, Dallas, Texas; and various other representatives of the company.

•

NATIONAL TRANSIT PUMP & MACHINE COMPANY

Oil City, Pa.

Exhibiting with the Frick-Reid Supply Corporation.

•

NATIONAL TUBE COMPANY

Pittsburgh, Pa.

Booths Nos. 633, 635, 637, 639, and 641

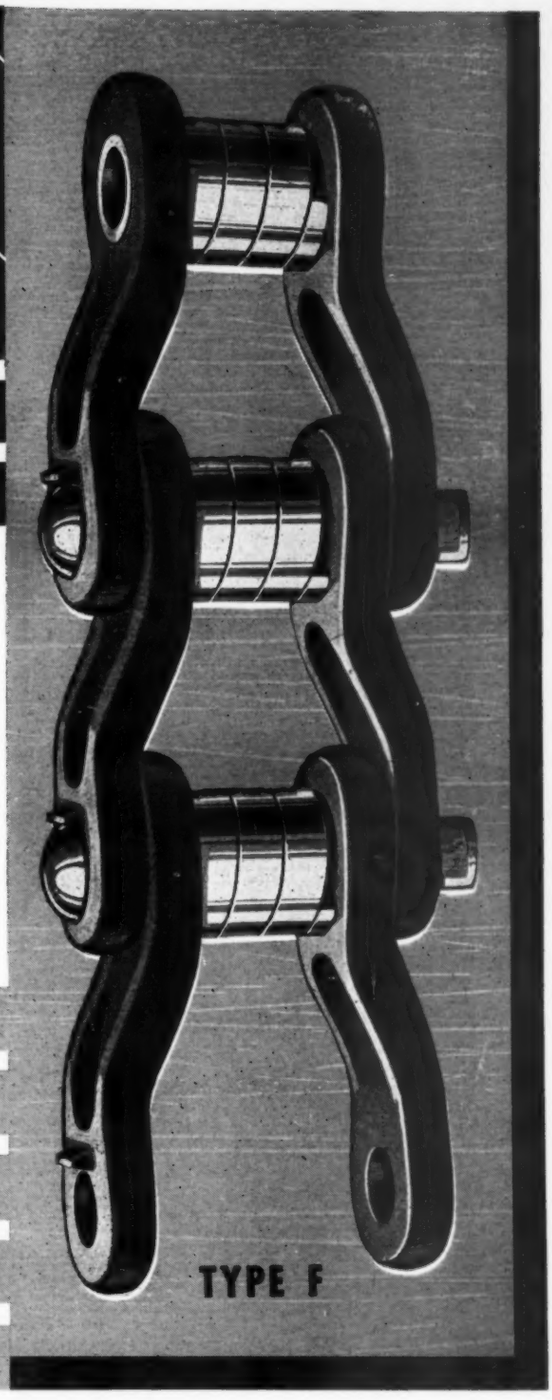
EXHIBIT: Oil country tubular goods, including National A.P.I. casing, tubing, and drill pipe; National A.P.I. seamless interior upset drill pipe fitted with various types of tool joints; National external upset tubing with high tensile couplings; National special alloy casing with long threads and couplings; National external upset casing with long threads and couplings; National semi-flush joint casing. Special display illustrating National Tube Company's facilities for research and testing, with actual specimens of tested oil country goods.

Representatives: H. J. Morlang, W. F. McConnor, J. B. Graham, W. C. Moser, A. C. Temmel, J. R. Boax, P. F. Houserman, John Helmstadter, H. M. Cooley, and E. E. Smith.

SPIRALOY

A GREAT ROTARY CHAIN FOR THE HEAVIEST DRILLING

● Its design and the material used in its construction were developed from extensive field tests and experiments... Manufactured in A. P. I. No. 3 and A. P. I. No. 4 sizes.



★ HIGH STRENGTH

★ SMOOTH OPERATION

★ UNUSUAL WEAR RESISTANCE

★ IDEAL DIRECT FLOW LUBRICATION

★ IDEAL IMPACT ABSORBING ROLLER..

NSCO

National

THE NATIONAL SUPPLY COMPANY OF DELAWARE

DIVISION OFFICES: PITTSBURGH, PA., FORT WORTH, TEXAS, TULSA, OKLA., TORRANCE, CALIF. - MAIN OFFICE: TOLEDO, OHIO

NEW BEDFORD CORDAGE COMPANY

New York, N. Y.

Exhibiting with Continental Supply Company.

•

NORVELL-WILDER SUPPLY COMPANY

Beaumont, Texas

Booths Nos. 104, 106, 108, 110, 112, 114, 116, 118, 120, 205, 207, 209, 211, 213, 215, 217, 219, and 221

EXHIBIT: Equipment of the following manufacturers will be displayed: A. Leschen & Sons Rope Company, The Kennedy Valve Manufacturing Company, Jefferson Union Company, Coffing Hoist Company, Western Block Company, Dean Brothers Company, Hewitt Rubber Corporation, Baash-Ross Tool Company, and Production Equipment Company.

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O

OAKITE PRODUCTS, INC.

New York, N. Y.

Booths Nos. 565 and 566

EXHIBIT: An exhibit graphically showing up-to-the-minute methods for handling the various cleaning operations presented by the producing, refining, transportation, and distributing divisions of the oil industry. One of the featured operations will be stripping of paint from oil storage tanks, tank cars, and similar equipment. Removal of paint from equipment, prior to refinishing, has been placed on a faster, more thorough and more economical basis through the recent development of a patented method known as the Hot Oakite Flow-On Method. It makes possible the stripping of large areas at one time with little manual effort, and without fire hazards of any kind. The Oakite display also will visualize the importance of removing insulating deposits from heat exchange equipment, and show the methods that have been found most successful for doing this work, without the need for dis-assembling the apparatus being treated.

Representatives: J. A. Carter, assistant sales manager; J. C. Leonard, Chicago division manager; Wm. A. Dowen, Texas representative; E. Rightor, New Orleans representative; and J. R. Whyte, Tulsa representative.

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O. C. S. MANUFACTURING COMPANY

Coffeyville, Kansas

Booth No. 1011 (outside)

EXHIBIT: The O. C. S. Automatic Weight Control and O. C. S. double-reduction pumping units will be displayed.

The O. C. S. Automatic Weight Control is an independent unit consisting of a V-8 power unit driving a self-locking worm gear through a variable speed, reversible, hydraulic transmission. A sprocket on the worm gear shaft connects to the line shaft on the drawworks. The mechanism in the control box, either manually or automatically, varies the speed or direction of the hydraulic transmission, which in turn controls the pipe through the self-locking worm gear and drawworks.

W. B. PYRON, Vice-Pres. and General Mgr., Gulf Oil Corporation, Texas Division, Houston, Texas.

E. C. LOWRY, Division Manager, Shell Petroleum Corporation, Houston, Texas.

O. Q. LOMAX, General Superintendent, Humble Pipe Line Company, Houston, Texas.

The advantages claimed for the O. C. S. Automatic Weight Control are as follows: More speed, straighter hole, continuous feeding, more hole per bit, feeds up as well as down, helps prevent freezing pipe, recovers better cores, and faster reaming is made possible.

Accurate and positive weight control in rotary drilling is essential to meet requirements of present drilling practice. Manual controls by use of the weight indicator have made it possible to drill holes varying in satisfaction with the skill or attention of the operator. The O. C. S. Automatic Weight Control is mechanical, eliminates the human element, and maintains the ideal weight at all times, its makers state.

The O. C. S. double-reduction pumping units are enclosed, sturdy, compact, and efficient machines for pumping oil wells where portable service equipment is desirable. These pumpers incorporate the high efficiency of roller chain and roller bearings in totally enclosed self oiling units, their makers state. They can be equipped with either electric motors or multi-cylinder engines. With a V-belt drive from the prime mover to the unit primary shaft and a double reduction of multiple roller chains in the unit, a triple reduction is obtained between the motor and the polish rod. An electrically-welded steel case supports adjustable and self-aligning Timken tapered roller bearings that run in an oil-bath for lubrication. The wrist pin bearings are Timken self-aligning, while the beam bearings are weather-proof self-oiling bearings.

Representatives: W. P. Turner, president; D. R. Brown, executive vice-president; D. C. Myers, secretary-treasurer; C. B. Morton, Tulsa, Oklahoma; A. G. Evans-Lombe, Fort Worth, Texas; F. D. Stanley, chief engineer; C. A. Anderson, Coffeyville, Kansas; John Schuetz, Coffeyville, Kansas; H. B. Dick, Oklahoma City, Oklahoma; D. O. Larkin, Wichita, Kansas; LeRoy Williams, Amarillo, Texas; D. M. Cade, Odessa, Texas; Tom Scott, Corpus Christi, Texas; Melvin L. Dick, Longview, Texas; R. D. Ekstrand, Great Bend, Kansas; D. E. Hazlewood, Seminole, Oklahoma; Joe Kilchenstein, Fort Worth, Texas; J. H. Kountz, Tulsa, Oklahoma; Harold McSpadden, Kilgore, Texas; B. H. Palamountain, Houston, Texas; Glen Wilson, Seminole, Oklahoma; and A. L. Mann, Hays, Kansas.

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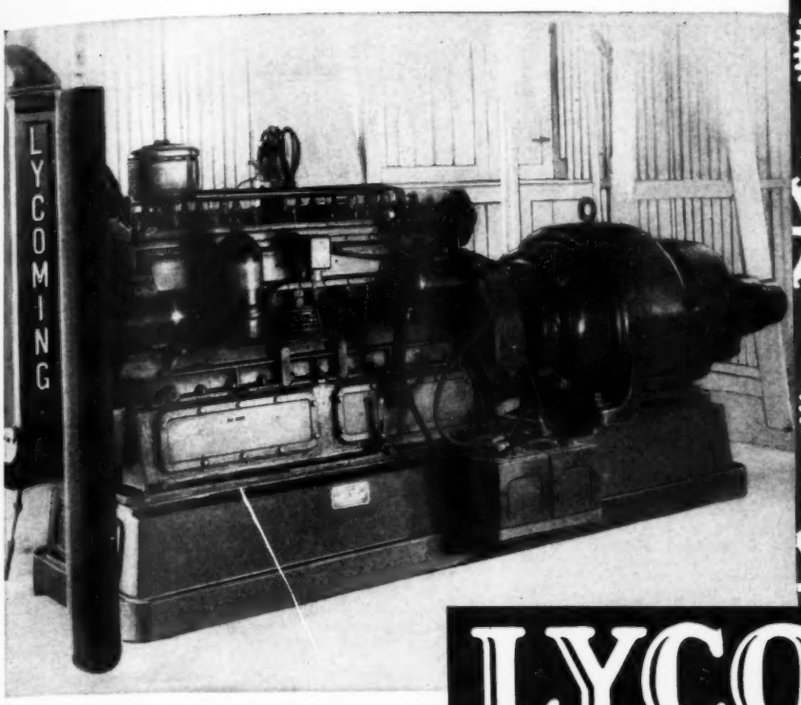
OIL CENTER TOOL COMPANY

Houston, Texas

Booths Nos. 400 and 401

EXHIBIT: This equipment will be displayed: Various Christmas tree hook-ups, a full line of forged-steel fittings, blowout preventers (including the new stripper rubber type preventer), the new type "L" adjustable choke, well control assemblies, and a representative showing of comparatively new casing and tubing heads.

Representatives: A. J. Penick, Kirby Penick, B. V. Fisher, W. Holmes Smith, H. C. Stewart, Pat McGuirt, Ed McCabe, Walter Burke, and Carl Mount.



LYCOMING SG-30 KW Generator Plant in Texas refinery. Load consists of 5 KW of lighting; a 10 HP motor and a 7½ HP motor, each driving a centrifugal water pump. Total load is approximately 22 KW

Economical Dependable REFINERY POWER

LYCOMING NATURAL GAS ENGINES

Standard Equipment on

LYCOMING NATURAL GAS ENGINES

Reducing attendance and maintenance to a minimum

1. Thermostatic by-pass circulating water temperature control
2. Heavy stationary type cast iron bed-plate
3. Lubricating oil safety device
4. Patented zero-lash hydraulic valve lifters
5. Elimination of all tubing in lubrication and engine cooling systems
6. Water cooled exhaust manifold
7. Circulating water safety device
8. Silchrome inserted exhaust valve seats
9. Built-in gear driven governer, with no external linkage
10. Packless water pump

FOR 30 years LYCOMING has represented the standard of reliable power in many fields. Now this dependable power is offered to Oil Refineries. "LYCOMING" GAS-ELECTRIC units provide an economical source of current wherever electric light and power are required. Available in 10 to 30 K W single-engine units. In 25 to 60 K W dual-engine units. All generator units are self-contained on cushion suspended bed-plate that may be placed on any level floor capable of carrying the dead weight. LYCOMING Natural Gas Engines offer efficient power for driving oil and water pumps, air and gas compressors, 4, 6 and 8 cylinder models, identical in basic design with majority of parts interchangeable. Built specifically to operate on Natural Gas.

Write for new booklet on LYCOMING "AG" Series, giving complete information, descriptions and specifications.

LYCOMING MANUFACTURING COMPANY

Los Angeles Office and Warehouse: 3443 Wilshire Blvd., Phone Fitzroy 3122-3 • Field Store and Service: Bakersfield
Moorlane Co. Office and Warehouse: 409-11 East Archer St., Tulsa—565 First National Bank Bldg., Oklahoma City
Da las Office and Warehouse: 3600 Commerce St. • Home Office, Works and Foundries, Williamsport, Pennsylvania

OIL WELL SUPPLY COMPANY

Dallas, Texas

Booths Nos. 532, 534, 536, 538, and 540

EXHIBIT: Two major innovations in rotary drilling machinery will be announced and displayed for the first time at the Houston Show.

Representatives: Personnel of the Houston branch.

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C. M. O'LEARY, JR.

Houston, Texas

Booth No. 445

•

OLYMPIC ENGINEERING CORP.

Los Angeles, Calif.

Exhibiting with W-K-M Company.

•

OSAGE METAL COMPANY, INC.

Booths Nos. 735, 737, and 739

EXHIBIT: Display will consist of various stages of the manufacture of Osage Metal, samples, literature, etc.

Representatives: V. B. Likins, Max D. Westbrook, and R. E. Holt.

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OSHMAN OUTDOOR STORE

Houston, Texas

Booth No. 1312

EXHIBIT: Display will consist principally of apparel that is particularly adapted for heavy-duty service in the Gulf Coast oil area. Special field and engineering boots, 8-in. driller boots, popular for warm weather wear, rain coats, field pants, breeches, shirts, jackets, etc., are a few of the items that will be included.

Representatives: J. S. Oshman, C. L. Keith, and G. B. Skelton.

•

THE OSTER MANUFACTURING CO.

Cleveland, Ohio

Booths Nos. 714, 716, 718, 720, and 722

EXHIBIT: Equipment on display will be the company's Nos. 704 O.F. and No. 8-XHD power pipe threading and bucking-up machines designed especially for oil field work, the No. 922 Bolt Theading Machine, the No. 222 Torch Cutting Machine for pipe intersections, the Nos. 512 and 521 Tom Thumb Portable Pipe and Bolt Threading Machines, and a complete line of stocks and dies for the smaller sizes.

Representatives: A. S. Gould, vice-president; H. C. Gardner, Texas district manager; Lew Gardner, representative; P. E. Willis, representative; Henry Zuerl, demonstrator; and Stanley Piascik, demonstrator.

J. A. BERMINGHAM, Division Manager, The Texas Company, Houston, Texas.

O. D. STORY, Purchasing Agent, Shell Petroleum Corporation, Houston, Texas.

JOHN C. NICKLOS
Nicklos Drilling Company, Houston, Texas.

OTIS PRESSURE CONTROL, INC.

Dallas, Texas

Booths Nos. 1324 and 1326 (Tent)

EXHIBIT: Display of the Otis square kelly drilling head and accessories, Otis removable bottom-hole chokes, mixing valves, Otis patented snubbing equipment, paraffin scrapers, and Otis closing tools.

Representative: J. C. Luccous.

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P

PACKING ENGINEERING CORPORATION

Cranford, N. J.

Booth No. 148

EXHIBIT: Ace-O-Pax plastic and other stuffing-box packings will be on display.

Representatives: J. E. Young and E. H. Miller.

•

PAGE STEEL & WIRE DIVISION OF AMERICAN CHAIN & CABLE COMPANY, INC.

Monessen, Pa.

Booth No. 727

EXHIBIT: Display of Chain Link Fence as used for enclosure purposes around refineries; and welding wire.

Representative: E. J. Flood.

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PARKERSBURG RIG AND REEL COMPANY

Parkersburg, West Virginia

Booths Nos. 1023, 1028, 1033 (Outside)

EXHIBIT: The following items of equipment will be on display: Long stroke pumping unit; 54-in. stroke pumping unit; 74-in. stroke pumping unit; 136-ft. derrick complete with substructure; pipe racks and pyramid type gin pole; and hydromatic brake.

Representatives: J. M. Crawford, chairman of the board; C. A. Ruf, vice-president and general manager; P. L. Brooks, sales manager; V. E. Ashford, Houston district manager; Wm. Schwemlein, chief engineer; H. L. Dickson, Tulsa district manager; E. L. Byer, Dallas district manager; J. A. Lyne; E. M. Fontaine; J. M. Morlan; and J. N. Wofford.

•

PATTERSON-BALLAGH CORPORATION, LTD.

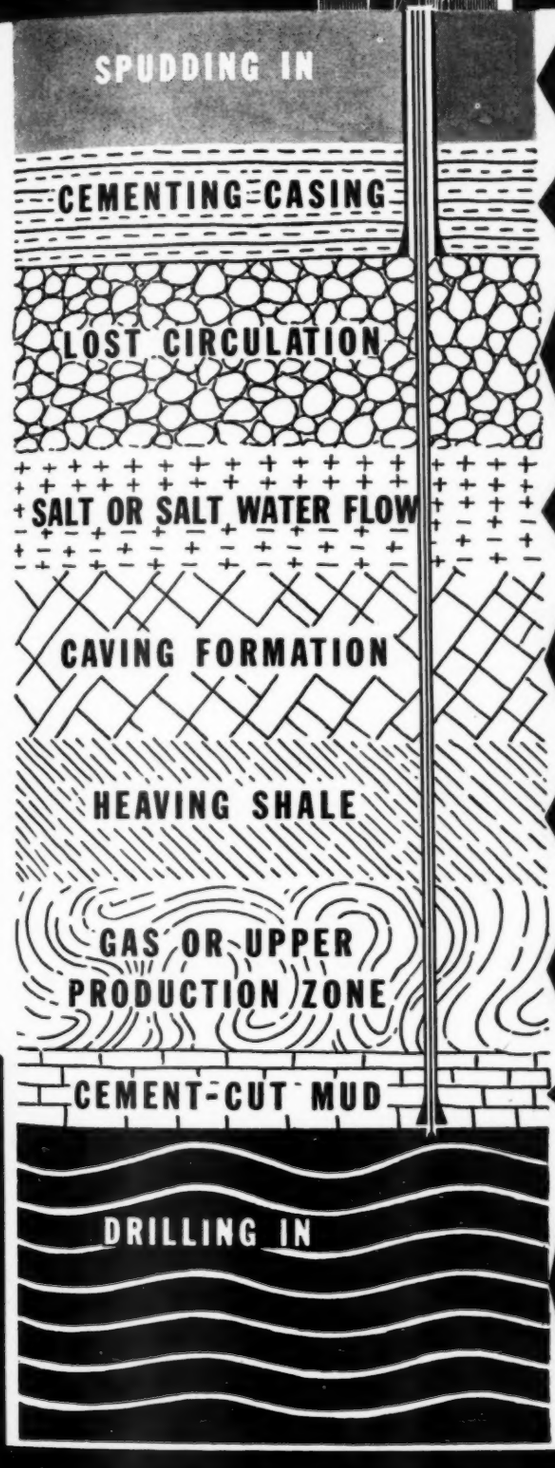
Los Angeles, California

Booth No. 1211

EXHIBIT: Display of casing protectors, stabilizers, wire-line guides, swivel bumpers, mud guns, and installation tools used in the installation of casing protectors.

Representatives: J. M. O'Melveny, J. C. Ballagh, and T. M. Smith, Jr.

There's a BAROID PRODUCT for every step in drilling



AQUAGEL / BAROCO

Aquagel—Concentrated colloidal gel-forming clay. One ton makes about 150 barrels of excellent drilling fluid when mixed with fresh water.

Baroco—For use where water is contaminated with salt.

AQUAGEL-CEMENT

Aquagel-Cement—Gives a better bond between casing and hole, improving shut-off of gas, water, or oil.

AQUAGEL / FIBROTEX / AQUAGEL-CEMENT

Aquagel—In proper concentration often prevents or restores loss of circulation.

Fibrotex—12 to 14 lbs. of **Fibrotex** per barrel of mud provide unusual sealing qualities.

Aquagel-Cement—Possesses unusual ability to plug creviced or cavernous areas. Does not flow out like neat cement.

BAROCO / BAROID

Baroco—Maintains viscosity and wall-building properties in the presence of salt.

Baroid—Muds suitably weighted with **Baroid** counterbalance the pressures from salt water flows.

AQUAGEL / BAROID

Aquagel—By preventing the penetration of water, the use of **Aquagel** frequently eliminates the tendency of formations to cave.

Baroid—Muds weighted with **Baroid** have demonstrated their efficiency in holding caving formations in place.

BAROID / STABILITE

Baroid—Muds can be made up to high weights for the control of heaving or disintegrating shale.

Stabilite—The improved chemical thinner—maintains workable viscosities even though highly weighted muds are used in shale areas.

STABILITE / BAROID / AQUAGEL

Stabilite—Frees entrained gas and reduces viscosity.

Baroid—Pumpable muds weighing as much as 145 lbs. per cubic foot can be made with **Baroid**.

Aquagel—Helps prevent the filtration of water into formations.

STABILITE

Stabilite—Often prevents discarding cement-cut mud by reducing viscosity and restoring wall-building properties.

AQUAGEL / BAROID / STABILITE

Aquagel—Wells drilled in with straight **Aquagel** water mud in low pressure areas, swab on production and clean up quicker because the thin, impervious mud cake is very easy to remove.

Baroid—A combination of **Baroid** and **Aquagel** provides the ideal drilling fluid for pressure areas.

Stabilite—Provides safety by keeping mud free of gas, thereby maintaining weight required. • • • *Stocks of Baroid Products, and Service Engineers, are available in or near all active oil fields.*

BAROID SALES DEPARTMENT

NATIONAL PIGMENTS & CHEMICAL DIVISION OF
NATIONAL LEAD COMPANY
BAROID SALES OFFICES • LOS ANGELES • TULSA • HOUSTON

PEERLESS PUMP COMPANY

Los Angeles, California

Exhibiting with M. N. Dannenbaum Company.

•

PETROLEUM ELECTRIC POWER CLUB

Booths Nos. 9, 10, and 11

EXHIBIT: Someone will be in booth at all times as a reception committee with whatever information may be desired by those interested in power for producing, pipe line, and refining purposes.

Representatives: W. H. Stueve, Oklahoma Gas & Electric Co., Oklahoma City; E. L. Robinson, Gulf States Utilities Company, Beaumont; F. M. Austin, Houston Lighting and Power Company, Houston; O. W. Jones, Central Power and Light Company, Corpus Christi, Texas; P. M. Cordell, Texas Electric Service Company, Fort Worth; W. G. Moore, Texas Power and Light Company, Dallas; J. E. Elliott, Southwestern Gas and Electric Company, Shreveport, Louisiana; W. S. Baugh, Kansas Gas and Electric Company, Wichita, Kansas; F. A. Graham, Kansas City Power and Light Company, Kansas City, Missouri; and D. C. McKee, The Empire District Electric Co., Joplin, Missouri.

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PETROLEUM SERVICE BUREAU

Tulsa, Oklahoma

Booth No. 714-A

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PETROLEUM TIRE & SUPPLY COMPANY

Houston, Texas

Booths Nos. 1200 and 1301

•

P. & D. SPECIALTY COMPANY

Houston, Texas

Booth No. 402

•

PORTABLE RIG COMPANY

Houston, Texas

Booths Nos. 244, 246, 248, 250, 252, 345, 347, 349, 351, and 353 (Inside); 1003, 1004, 1005, and 1006 (Outside)

EXHIBIT: In the outside space the following equipment will be displayed: Model 876-8 unitized portable rig, and Model 810-6, also a unitized portable rig, in operation, both mounted on the same derrick and complete with pumps on both rigs. Other Portable Rig Company products, including Waukesha engines and utility units, also will be exhibited in the outside location.

S. Y. HUTCHINSON, Chief Engineer, Houston Oil Co. and Houston Pipe Line Co., Houston, Texas.

A. R. WILSON, Asst. to Production Manager, The Texas Company, Houston, Texas.

A. O. BEHLING, Division Superintendent, Humble Oil and Refining Company, Corpus Christi, Texas

Representatives: L. E. Hodges, L. D. Cain, O. D. Small, V. R. Wittigh, E. R. Poole, W. S. Lighbourn, D. C. Gassoway, J. P. Morrow, and J. L. Kluppel.

•

THE WM. POWELL COMPANY

Cincinnati, Ohio

Booths Nos. 147 and 149

EXHIBIT: Complete line of bronze, iron, steel, and malleable iron valves especially adapted for oil well and refinery service will be displayed. Included will be gate, globe, angle, check, manifold, and test gate valves, and mechanical-lift plug cocks.

Representatives: E. K. Pierce, James Coombe, and William Heilig.

•

PHILADELPHIA STEEL & IRON COMPANY

Philadelphia, Pa.

Exhibiting with Maintenance Engineering Corp.

•

PITTSBURGH EQUITABLE METER CO. MERCO NORDSTROM VALVE CO.

Pittsburgh, Pa.—San Francisco, Calif.

Booths Nos. 335 and 337

EXHIBIT: Equipment on display will include Eureka water meter, No. 0 Emco meter, 2-in. gasoline meter, 1-in. ejector regulator, 1-in. spring type field regulator, 2-in. low-pressure balanced valve regulator, No. 142 and No. 143 Emco Nordstrom valves, and "Hyperseal" type Nordstrom valves.

Representatives: A. J. Kerr, James H. Baker, C. K. Madison, M. D. Gilbert, and E. P. Martin.

•

PITTSBURGH VALVE & FITTINGS CO.

Barberton, Ohio

Booth No. 1219

EXHIBIT: "Pittsburgh Valve" valves, fittings, unions, etc., will be on display.

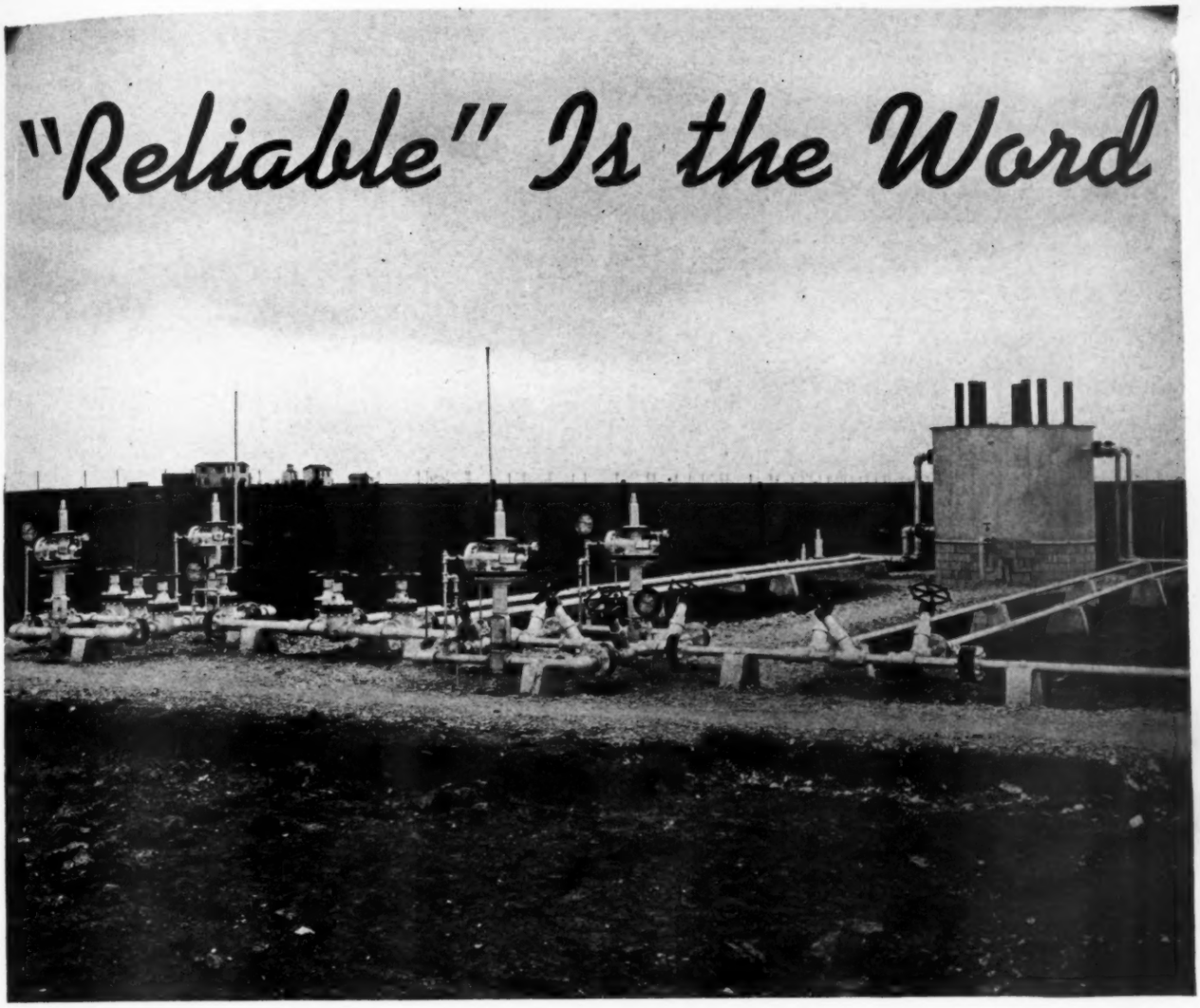
Representatives: E. C. Bostock, president; C. L. Selkregg, vice-president; Lester D. Seymour, general manager; V. A. Walker, chief engineer; T. W. Harvey, engineer; W. C. Goza, district manager; E. H. Gaddis; M. A. Bradburn; C. N. Weakley; and F. F. Tranchina.

•

PRECISION SCIENTIFIC COMPANY

Chicago, Illinois

Exhibiting with W. H. Curtin & Co.



FOR MASONEILAN REGULATORS

All over the world the Masoneilan trademark on pressure and vacuum regulators is the accepted symbol of dependable service —an assurance of years in the line and a minimum of hours in the repair shop.

And this is no accident. Over half a century of practical experience goes into their design; only the best of materials go into their construction; painstaking care and precision standards guide their manufacture and assembly; actual operating conditions are duplicated in their thorough testing.

Specify Masoneilan Regulators for gas, oil, water, air and steam service under all conditions. Write our office nearest you for complete information.

MASONEILAN

MASON-NEILAN REGULATOR COMPANY, 1193 ADAMS STREET, BOSTON, MASS., U. S. A.

New York Philadelphia Pittsburgh Chicago Tulsa St. Louis Houston Los Angeles

THE PRESSURE DRILLING COMPANY

Houston, Texas

Booth No. 1008-B (Outside)

EXHIBIT: The following items will be displayed: (1) round grief stem drive bushing; (2) round flush joint grief stem; (3) full hole back-pressure valve; (4) section of double streamline drill pipe; (5) packing rubbers for stuffing box; (6) adjustable rotary flow bean.

Representatives: James C. Fortune and William R. Walne.

•

PRESSURE TRAP VALVE COMPANY

Houston, Texas

Exhibiting with Allen, Sproull & Allen.

•

PRODUCTION EQUIPMENT COMPANY

Beaumont, Texas

Exhibiting with Norvell-Wilder Supply Company.

•

% PROPORTIONEERS, INC. %

Providence, Rhode Island

Booth No. 932

EXHIBIT: On display will be automatic proportioning and mixing equipment for: (1) gum inhibiting and coloring gasoline; (2) acid-treating gasoline, lubricating oil, etc.; (3) asphalt, lubricating oil, and gasoline blending; (4) chemical proportioning pumps; (5) venturi and orifice flow meters; (6) proportional control of dry feeders and pumps from orifice plates or venturi tubes.

Representatives: R. P. Lowe, Providence, vice-president; W. W. Adams, Providence; R. W. Bier, Houston; Garrett Phillips, Houston; Dave Morey, Dallas; Ed Morey, Dallas; B. W. Vinson, Tulsa; and E. W. Holden, Tulsa.

•

PYRENE MANUFACTURING COMPANY

Newark, N. J.

Booths Nos. 617 and 619

EXHIBIT: Equipment on display will consist of a complete line of portable fire extinguishers of the vaporizing liquid, foam, soda-acid, anti-freeze, and carbon dioxide types. Fire extinguishing systems of the foam and carbon dioxide type also will be shown. Among the new products on display will be the Phomaire Play Pipe, which is a foam-making nozzle, and the Hydrogarde and Wintergarde water and anti-freeze type extinguishers whose solutions are expelled by means of pressure from a carbon dioxide gas cartridge. A complete line of Tire Chain and accessories will be shown.

Representatives: J. P. Maloney, general field sales manager; S. R. Smith, salesman; and B. S. Allen, salesman.

L. E. DELCUZE, Vice-President and Asst. Secy., Gulf Oil Corp., Texas Division, Houston, Texas.

W. MULLEMEISTER, Refinery Manager, Shell Petroleum Corporation, Houston, Texas.

FRED W. DALLAS, General Superintendent, Pure Oil Company, Gulf Coast Division, Houston, Texas.

R

J. P. RATIGAN

Los Angeles, Calif.

Booth No. 702

EXHIBIT: The following equipment will be on display: No. 91 rod hooks, No. 73 horsehead, No. 12 walking beam rocker, No. 7 and No. 50 grips, No. 2 clamp, No. 98 one-piece pull-rod grip, No. 14 Triangle "C" Link, No. 92 universal tubing wrench, No. 60 snap type rod wrenches, No. 90 tubing block clamp, No. 28 brass non-spark bell nipples, No. 111 shock absorber, No. 117 oil-less pitman stirrup bearing, No. 116 oil-less straight-lift beam hanger, No. 115 one-piece frame type oil-less beam hanger, No. 106 sucker rod elevator, No. 109 improved belt stretcher, and No. 103 wheel type safety rod wrench.

Representative: J. J. Cave.

•

RAYBESTOS DIVISION OF RAYBESTOS MANHATTAN, INC.

Bridgeport, Conn.

Exhibiting with Frick-Reid Supply Corporation.

•

READING-PRATT & CADY DIVISION OF AMERICAN CHAIN & CABLE CO., INC.

Bridgeport, Conn.

Booths Nos. 729 and 731

EXHIBIT: Will have a complete line of valves on display, of the type used by the oil industry; small bronze valves, bar stock steel valves, cast-iron valves, steel valves, and fittings.

Representatives: J. P. Ferguson, sales manager; J. A. Bynum, Houston district manager; and J. J. Reed, salesman.

•

RECTOR WELL EQUIPMENT COMPANY, INC.

Fort Worth, Texas

Booths Nos. 602 and 701

EXHIBIT: Complete line of Rectorheads, Rector tubing head (new retractable type), Rector drilling flanges, and Rector cable tool drilling head.

Representatives: L. L. Rector, C. W. Zartman, R. V. Evridge, C. L. Cron, W. T. Knight, J. W. Massey, E. W. Brockman, Roy Hammond, Clarence Hammond, and C. L. Forcum.

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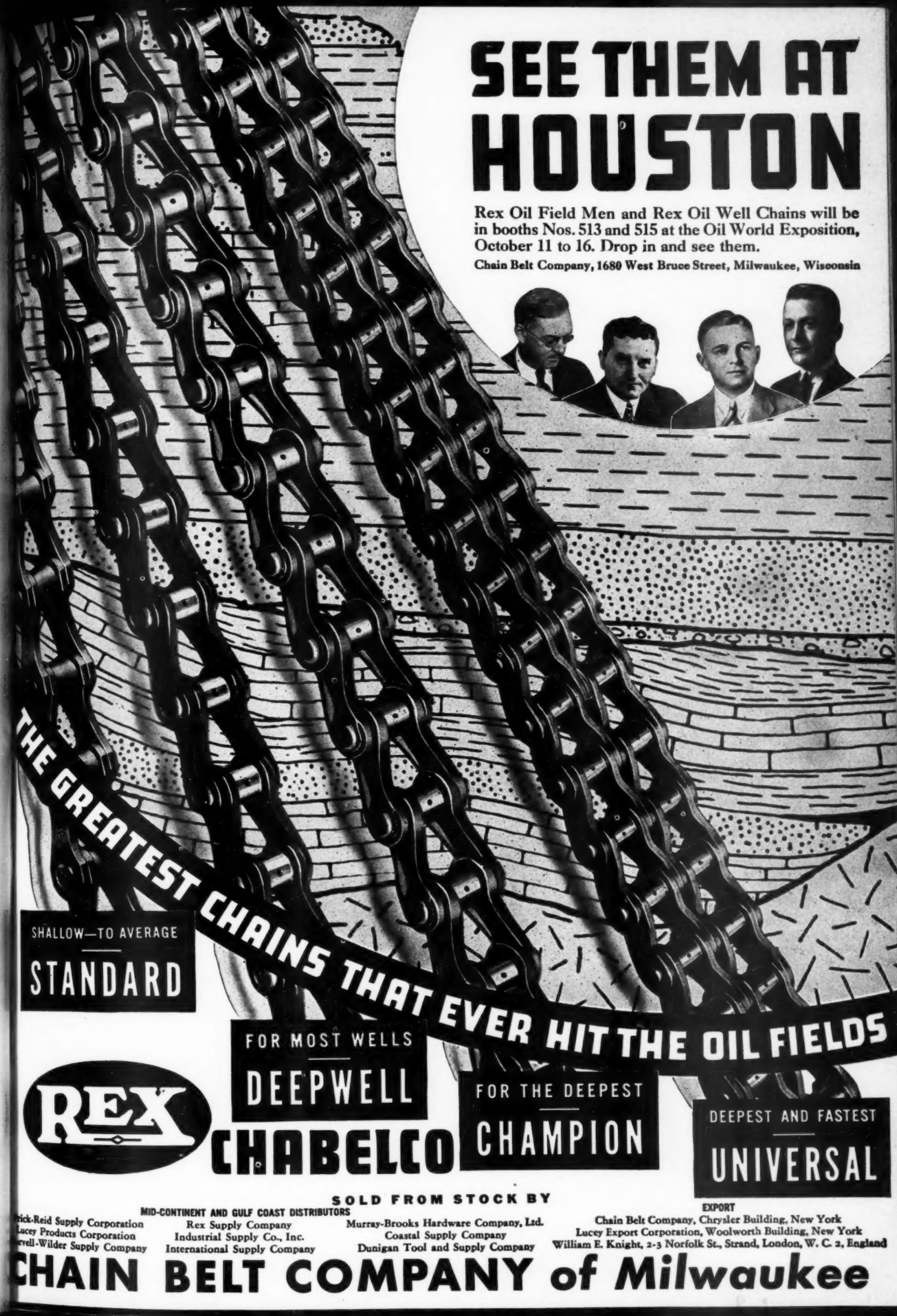
RED-REX CORPORATION

Houston, Texas

Booth No. 153

EXHIBIT: Red-Rex pipe unions will be on display, manufactured both of steel and


SEE THEM AT HOUSTON
Rex Oil Field Men and Rex Oil Well Chains will be in booths Nos. 513 and 515 at the Oil World Exposition, October 11 to 16. Drop in and see them.
Chain Belt Company, 1680 West Bruce Street, Milwaukee, Wisconsin
THE GREATEST CHAINS THAT EVER HIT THE OIL FIELDS
SHALLOW—TO AVERAGE
STANDARD
FOR MOST WELLS
DEEPWELL
FOR THE DEEPEST
CHAMPION
DEEPEST AND FASTEST
UNIVERSAL
REX
CHABELCO
SOLD FROM STOCK BY
MID-CONTINENT AND GULF COAST DISTRIBUTORS
rick-Reid Supply Corporation
Lucey Products Corporation
ervell-Wilder Supply Company
Rex Supply Company
Industrial Supply Co., Inc.
International Supply Company
Murray-Brooks Hardware Company, Ltd.
Coastal Supply Company
Dunigan Tool and Supply Company
EXPORT
Chain Belt Company, Chrysler Building, New York
Lucey Export Corporation, Woolworth Building, New York
William E. Knight, 2-3 Norfolk St., Strand, London, W. C. 2, England
CHAIN BELT COMPANY of Milwaukee

malleable iron, the former being capable of withstanding a pressure of 8000 lb., and the latter a pressure of 6000 pounds.

Representatives: C. E. Girten, R. H. Ratliff, and C. Q. Turne.

•

REED ROLLER BIT COMPANY

Houston, Texas

Booths Nos. 124, 126, 128, 130, 225, 227, 229, and 231

EXHIBIT: Equipment displayed will be the following:

Reed DK roller bits; Reed Barrett-Robishaw drilling bit with wire-line retractable core barrel; Reed retractable wire-line collapsible blade drilling bit and core barrel; Reed basket bits; Reed replaceable blade fishtail bits; Reed welded-in blade drilling bits; Reed Type 38-39 heavy-duty reamer; Reed step reamer or hole opening bit; Reed tool joints; Reed substitutes; Reed Kor-King core drill; Reed forged alloy-steel heat-treated drill collars; and Reed rotary engines.

Representatives: S. P. Farish, R. G. Hamaker, L. T. Anderson, F. C. Gignoux, J. V. Pennington, W. L. Childs, C. J. Fontaine, G. G. Harrington, J. C. Stokes, and J. J. Butler.

•

REGAN FORGE & ENGINEERING CO.

Houston, Texas

Booths Nos. 404, 406, 505, and 507

EXHIBIT: The items to be featured are principally the company's latest developments in deep-well drilling equipment, as follows: 360-ton Type E, double-deck crown block; 360-ton Type E, single-deck crown block; 200-ton Type B, double-deck crown block; 76-in. traveling block; cast-alloy steel heat-treated, pre-tested casing hook; Type K high-pressure, full-bore, pressure-operated blowout preventer.

Representatives: W. S. Proctor, manager of the Mid-Continent Division; and J. Begg, chief engineer of production.

•

JOSEPH REID GAS ENGINE COMPANY

Oil City, Pennsylvania

Exhibiting with Frick-Reid Supply Corporation.

•

REILLY TAR & CHEMICAL CORPORATION

Indianapolis, Indiana

Booth No. 929

EXHIBIT: Will have on display methods and materials for the protection of pipe lines against corrosion. The materials will be plasticized coal tar enamels and primers. These materials are said to withstand temperatures approaching 30 deg. below zero without cracking or chipping, and will not sag or run at temperatures approaching 200 deg. fahrenheit.

Representative: L. R. Rogers.

M. E. BROCK, Assistant to Vice-President, Gulf Oil Corp., Texas Division, Houston, Texas.

JOHN S. IVY, General Superintendent, Land, Geological and Mapping Departments, United Gas System, Houston, Texas.

R. Y. SMITH
Smith and McDannald, Houston, Texas.

RELIANCE REGULATOR CORPORATION

Alhambra, Calif.

Exhibiting with Westcott & Greis, Inc.

•

REPUBLIC RUBBER COMPANY

Youngstown, Ohio

Exhibiting with Frick-Reid Supply Corporation.

•

REPUBLIC STEEL CORPORATION

Cleveland, Ohio

Booths Nos. 745 and 755

EXHIBIT: Will feature the company's heat-treated casing that is said to insure greater setting depths for lighter weights while maintaining the present safety factors. Republic also will feature belled-end casing for welding in the hole. Belled-end joints, both welded and not welded, will be on display. An interesting display of oil country products fabricated from Republic Agathon Alloy Steels will also be included in the exhibit.

Representatives: W. M. Neckerman, assistant vice-president in charge of operations; C. H. Elliot, assistant vice-president in charge of operations; J. E. Holmes, manager of sales, Pipe Division; C. W. Eest, Houston district sales manager; G. F. Hess, assistant manager of sales, Alloy Steel Division; Hoyle Jones, Tulsa district sales manager; R. W. Working, assistant district sales manager of Birmingham; and C. W. Ruth, assistant director of advertising.

•

RIDGE TOOL COMPANY

Elyria, Ohio

Booths Nos. 646, 648, and 650

EXHIBIT: The following products will be displayed: Complete line of Ridgid vises, including the new chain vices; Ridgid pipe threaders; and Ridgid pipe wrenches, including the new all-alloy heavy-duty line.

Representatives: Seth Smith, Ralph Chamberlain, J. J. McIntosh, J. Graham, and W. L. Parcell, sales manager.

•

ROBINSON ORIFICE FITTING COMPANY

Los Angeles, Calif.

Exhibiting with Westcott & Greis, Inc.

•

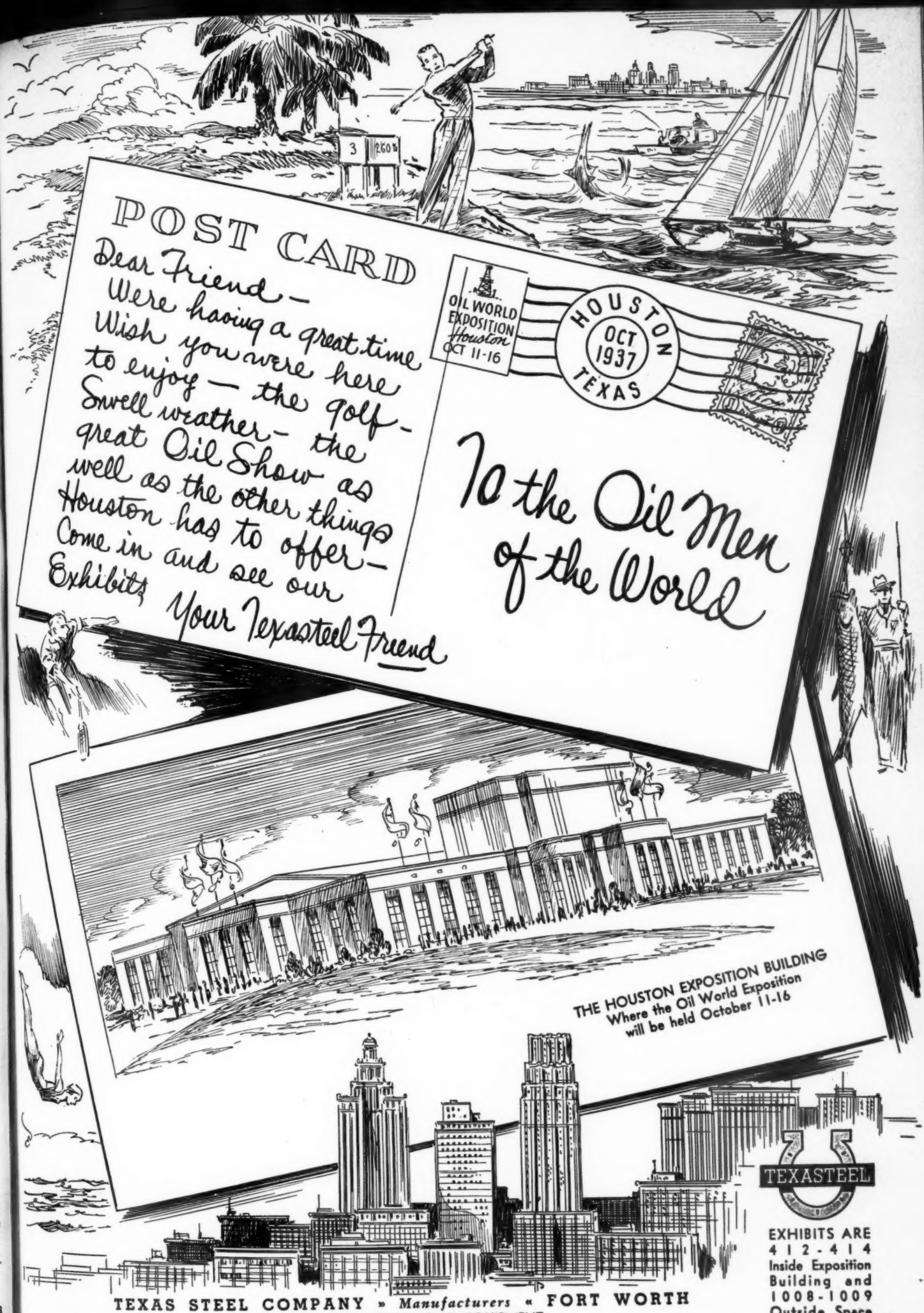
ROYAL MANUFACTURING COMPANY

Tulsa, Oklahoma

Booth No. 4

EXHIBIT: Water-softening equipment will be displayed, as well as high-temperature paints, and Royal tool joint dressing.

Representatives: Wm. G. Cummings, F. W. Johns, and W. R. Mallory.


POST CARD
Dear Friend—
Were having a great time
Wish you were here
to enjoy — the golf-
Swell weather - the
great Oil Show as
well as the other things
Houston has to offer—
Come in and see our
Exhibits Your Texasteel Friend
OIL WORLD EXPOSITION Houston OCT 11-16
HOUSTON OCT 1937 TEXAS
To the Oil Men of the World
THE HOUSTON EXPOSITION BUILDING
Where the Oil World Exposition
will be held October 11-16
TEXASTEEL
EXHIBITS ARE
412-414
Inside Exposition
Building and
1008-1009
Outside Space
TEXAS STEEL COMPANY » Manufacturers « FORT WORTH
TEXASTEEL - OILFIELD PUMPING EQUIPMENT
ELECTRIC STEEL SUCKER RODS—JACKS—SWINGS—BACKSIDE ASSEMBLIES—UNITS—KNOCK-OFFS

S

SAFETY EQUIPMENT SERVICE COMPANY

Cleveland, Ohio

Booth No. 212

•

ST. LOUIS CORDAGE COMPANY

St. Louis, Missouri

Booth No. 1217

EXHIBIT: Complete line of manila oil field cordage will be on display, consisting of catlines, bull ropes, spinning lines, derrick lines, etc.

Representatives: K. K. Kirlin and Harold V. Pate.

•

SCHLUMBERGER WELL SURVEYING CORPORATION

Houston, Texas

Booths Nos. 1329 and 1331

EXHIBIT: The following will be displayed: (1) Charts illustrating the main uses of our electrical logs, i. e., correlations, determining the fluid content of the formations, etc. (2) Charts illustrating the main application of temperature measurements in wells, i. e., location of gas sands, correlation between cased or uncased wells, location of cemented zones, etc. Demonstration set illustrating the working of the Schlumberger thermometer. (3) Examples of water-flow problems solved by the Dale Photoelectric method. Exhibit of a Dale Photoelectric instrument; also a demonstration set illustrating the Dale method. (4) Exhibit of a Schlumberger wall sampler and of cores taken therewith.

Representatives: J. L. Mathieu, L. W. Storm, A. A. Perebinossoff, H. B. Marcovitch, and Glenn J. Baker.

•

SCINTILLA MAGNETO COMPANY, INC.

Sidney, New York

Booth No. 13

EXHIBIT: Will include Bendix magnetos and ignition devices as used in the oilfields. A feature of the display will be magnetos in actual operation. The booth will be occupied by the Scintilla Magneto Co., Inc., and the Zenith Carburetor Company, as both are subsidiaries of the Bendix Aviation Corporation.

Representatives: A. J. Poole will be in charge of the Scintilla exhibit, and B. W. Westcott of the Zenith Carburetor display.

•

SEALED POWER CORPORATION

Muskegon, Michigan

Booth No. 1213

EXHIBIT: Display will consist of all types of piston rings manufactured by the company for industrial equipment. The types of rings to be shown are: Sealed Power Compression, Joint-Seal, Oil Scraper, Super-Drainoil, and Corrosion-Resisting Compression.

Representatives: C. Allen Fulmer, manager Industrial Replacement Division; and Paul C. Johnson, vice-president.

J. N. TEAGUE, Division Petroleum Engineer, Humble Oil and Refining Co., Houston, Texas.

A. H. ROWAN
Rowan Drilling Company, Houston, Texas.

W. C. BEDNAR, Petroleum Engineer, Amerada Petroleum Corp., Hobbs, New Mexico.

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SERVICE PATTERN & MODEL WORKS

Houston, Texas

Booth No. 413

EXHIBIT: Displayed will be numerous patterns of the several companies with which business is done, the exhibit being designed to interest those in the oil industry.

Representatives: H. C. Brinkman and T. W. Russell.

•

SERVICE RECORDER COMPANY

Cleveland, Ohio

Exhibiting with Transportation Equipment Company.

•

SHAFFER TOOL WORKS

Brea, Calif.

Booths Nos. 317, 319, and 321

EXHIBIT: The following items of equipment will be on display: Shaffer cellar control gates; casingheads; fishing tools; flow beans; hookwall packers; kelly cocks; rotating blowout preventer; and stripper equipment.

Representatives: W. D. Shaffer, Carl W. Vogt, B. J. Ross, John H. Moran, Charles E. Geddes, S. E. Setser, T. E. Jackson, and W. E. Krupp.

•

TOM SHARP, INC.

Houston, Texas

Booths Nos. 600 and 601

•

SIVYER STEEL CASTING COMPANY

Milwaukee, Wisconsin

Exhibiting with M. N. Dannenbaum Company.

•

S. K. F. INDUSTRIES, INC.

Philadelphia, Pennsylvania

Booths Nos. 1423 and 1425

EXHIBIT: A complete line of ball and roller bearings and transmission appliances will be shown.

Representatives: R. H. DeMott, G. Palmgren, H. L. Gaddis, A. H. Dixon, D. R. Crull, B. F. Coombs, R. W. Carroll, N. Miller, and W. F. Weidner.

Flowing 35,000 Barrels

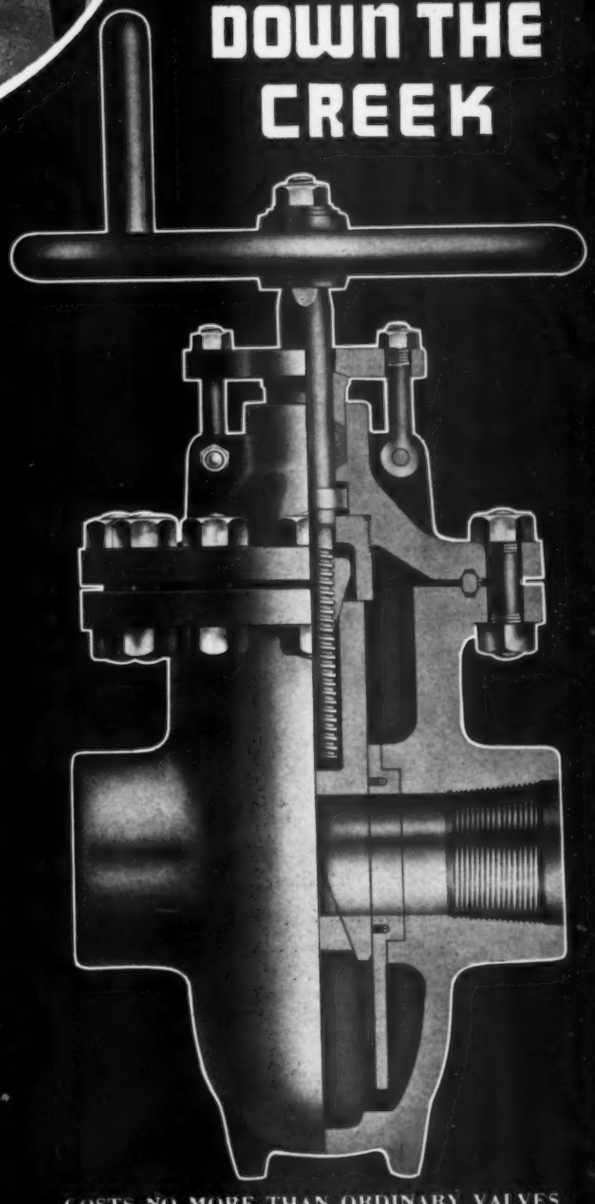
BUT MOSTLY DOWN THE CREEK

FROM LACK OF CONTROL!

When this one blew in, just 20 years ago, they called it a 35,000-barrel well. It doubtless was . . . or better . . . but there was little chance of more than a fair estimate, because the bulk of the initial production flowed down the creek or lowlands until it was brought under control.

Completion of these "gushers" was a man's size job with the flow equipment available then, and it's no walk-away today; yet modern engineering designs have made an entirely different job of it. The most interesting point to us is that these men, with the class of experience recalled by the above picture, are the first ones who turned to the W-K-M Through-Conduit Lubricated Gate Valve as the way out of gate valve trouble.

It's different!



COSTS NO MORE THAN ORDINARY VALVES

Sold Through Supply Stores Everywhere

W-K-M Company, Inc.

OIL FIELD, PIPE-LINE & INDUSTRIAL EQUIPMENT

HOUSTON, Texas, U. S. A.

Export Office: 74 Trinity Place, New York

Cable Address: "WILKOMAC"

A. O. SMITH CORPORATION

Milwaukee, Wisconsin

Booths Nos. 740 and 742

EXHIBIT: Will consist mainly of miniature models and test specimens.

Representatives: C. C. Joys, Jr., B. F. Bart, H. A. Bourne, K. Meyer, A. E. Butts, and J. Dilot.

•

E. M. SMITH COMPANY

Los Angeles, California

Booths Nos. 756, 758, and 760

EXHIBIT: Products displayed will be rotary hose, Grizzly brake block, Grizzly brake block band exchange, Grizzly wire line guide, and Grizzly drill pipe protectors.

Representatives: Walter G. L. Smith, Paul Kelting, R. S. Schermerhorn, and D. E. Carter.

•

HOWARD SMITH COMPANY

Houston, Texas

Booths Nos. 1205 and 1207

EXHIBIT: Stancliff screen and fittings will be displayed.

Representatives: P. F. Matlock, E. E. Davidson, Edward Burns, A. R. Mooney, Collins Matlock, W. B. Robinson, and H. D. Wilson.

•

NOWERY J. SMITH SUPPLY COMPANY

Houston, Texas

Booth No. 216

EXHIBIT: Oil and gas separators, Cop-Nic bolted steel tanks, derricks, and derrick rental and service will be shown.

Representatives: Nowery J. Smith, Fred G. Love, and M. C. Morris.

•

THE SONNER BURNER COMPANY

Winfield, Kansas

Booths Nos. 1235 and 1237

EXHIBIT: The company's air-cooled gas saving burner will be on display.

Representatives: P. J. Sonner, president; and H. P. McCullough, Houston representative.

•

SOUTHERN ENGINE AND PUMP CO.

Houston, Texas

Booths Nos. 102, 200, and 201

EXHIBIT: Southern pumping units, Southern lighting plants, Buffalo pumps, Pomona deep-well turbine pumps, Viking rotary pumps, and Hercules engines will be displayed.

Representatives: D. N. Wommack, W. G. Price, and H. H. McGilvray.

HU M. HARRIS, Drilling Op. Engineer, Humble Oil & Refining Co., Houston, Texas.

PAUL HUBBARD, Assistant Superintendent, Gulf Oil Corp., Texas Division, Houston, Texas.

W. T. DOHERTY, Division Superintendent, Humble Oil and Refining Company, Midland, Texas.

SPANG, CHALFANT & CO., INC.

Pittsburgh, Pennsylvania

Booths Nos. 144, 146, 245, and 247

EXHIBIT: Products to be featured will be Extreme Line Casing and Shrink Thread Drill Pipe.

Representatives: L. L. Brundred, H. G. Texter, A. S. Weaver, C. C. Brush, R. M. Burk, R. M. Sylvis, and Dave Neely.

•

SPENCER LENS COMPANY

Buffalo, New York

Exhibiting with W. H. Curtin & Co.

•

SPERRY SUN WELL SURVEYING COMPANY

Philadelphia, Pennsylvania

Booths Nos. 544 and 546

EXHIBIT: Will show the Surfo Clinograph, the H-K Inclinometer, the H-K Directional Magnetic Clinograph, as well as the Surwell Gyroscopic Clinograph. Also on display will be several samples of cores that have been oriented by the new Polarization method.

Representatives: G. L. Kothny, vice-president; R. S. Hyer; M. T. Higgs; and H. L. Berry.

•

STANDARD BRASS AND MANUFACTURING COMPANY

Port Arthur, Texas

Booths Nos. 634 and 636

EXHIBIT: Exhibit will be in conjunction with Chase Brass & Copper Company.

Representatives: Harry LeBlanc and George Boane.

•

THE L. S. STARRETT COMPANY

Athol, Massachusetts

Booth No. 437

EXHIBIT: A complete line of fine precision tools, steel tapes, dial indicators, and hack saw blades.

Representative: W. J. Clark.

•

STRONG, CARLISLE AND HAMMOND COMPANY

Cleveland, Ohio

Exhibiting with W. H. Curtin & Co.

•

SULLIVAN MACHINERY COMPANY

Michigan City, Michigan

Booths Nos. 1016, 1017, and 1021 (Outside)

(Continued on page 153)

(Continued from page 150)

T

C. J. TAGLIABUE MFG. CO.

Brooklyn, New York

Booths Nos. 344 and 346

EXHIBIT: Latest TAG developments in indicating, recording, and controlling instruments for temperature, pressure, flow, and level will be exhibited. Exhibit will be in conjunction with W. H. Curtin & Co.

•

TAYLOR FORGE AND PIPE WORKS

Chicago, Illinois

Booth No. 936

EXHIBIT: Equipment on display will include forged-steel flanges, seamless steel welding fittings, forged-steel nozzles, and spiral-welded pipe.

Representative: Paul R. Bush.

•

TECHNICAL OIL TOOL CORPORATION, LTD.

Los Angeles, California

Booth: Houston Oil Field Material Section

EXHIBIT: Complete display of Totco Drift Recorders showing steps in the process of manufacture and various types of container bodies for different methods of operation. Testing machines to show the accuracy of Totco recordations also will be shown.

Representatives: J. B. Wood, president; J. W. Culbertson, factory engineer; E. G. McConnell, Mid-Continent manager; J. L. Lindsey, East Texas, Louisiana, and Arkansas representative; C. W. Eichbaum, Texas-Gulf-Coast representive; and H. H. Peters, West Texas and New Mexico representative.

•

TEMPLETON, KENLY & CO.

Chicago, Illinois

Booths Nos. 439 and 441

EXHIBIT: Will display the new Simplex double-chain pull-rod jack, the No. 310 Simplex emergency tilting and vertical oil field jack, the new No. 2029 20-ton Simplex rigging jacks, Nos. 126 and 127 heavy-duty geared jacks that have toe lifts on the left and right hand side, respectively, for skidding unusually heavy rigs, No. 600 Series Simplex pushing, pulling, spreading, clamping, lifting, and wheel pulling maintenance set, 15-, 25-, 35-, and 50-ton Simplex journal jacks, and the company's standard line of jacks that are used in oil production.

Representatives: Charles Neher, Dallas, Texas; J. B. H. Henderson, Dallas; and J. B. Templeton, Chicago, Illinois.

•

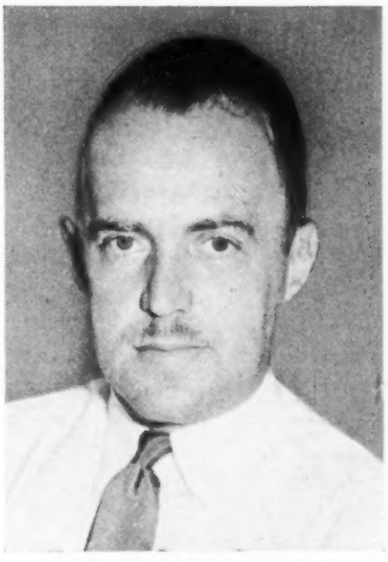
TENNESSEE COAL, IRON & RAILROAD COMPANY

Birmingham, Alabama

Exhibiting in United States Steel Corporation section.

C. A. RUSSELL, General Superintendent, Pan American Production Co., Houston, Texas.

G. B. CORLESS, Division Superintendent, Humble Oil and Refining Co., Houston, Texas.



J. ZABA, Chief Petroleum Engineer, Rio Bravo Oil Company, Houston, Texas.

THE TEXACONE COMPANY

Dallas, Texas

Booths Nos. 529 and 531

EXHIBIT: Equipment shown will be Texacone metallic packings, Texacone fabric high-pressure packings, and Flexibestos generated v-spiral packings.

Representatives: Hal T. Wheeler, general manager; D. B. McConnell, eastern sales manager; G. L. Bannon; and Frank Crow.

•

THE TEXAS COMPANY

Houston, Texas

Booth No. 8

EXHIBIT: Industrial lubricants will be on display.

Representatives: H. D. Gohlman, Jr., exhibit engineer; and O. W. Heye, industrial salesman.

•

TEXAS ELECTRIC STEEL CASTING COMPANY

Houston, Texas

Booths Nos. 436 and 537

EXHIBIT: Booth will be maintained for meeting the public; no equipment displayed.

Representatives: C. W. Shartle, F. M. Wittlinger, and T. H. Shartle.

•

TEXAS IRON WORKS

Houston, Texas

Booths Nos. 244, 246, 248, 250, 252, 345, 347, 349, 351, and 353

EXHIBIT: Various equipment of the company's manufacture, including fish tail bits, slips, packers and setting tools, heaving shale drilling assemblies, safety joints, valves, casing and tubing headfishing tools, rotary reamers, nipples, whipstocks and whipstock setting tools, etc.

•

TEXAS RUBBER & SPECIALTY CORP.

Houston, Texas

Booths No. 301 and 303

EXHIBIT: On display will be the company's Okeh line of pump parts, Okeh hi-pressure pistons, File-Hard liners and File-Hard rods and packings, together with the recently introduced safety tool, the Okeh blowout preventer tester. Also on exhibit will be the Okeh mud saver and Okeh oil saver buckets, which are new items.

Representatives: J. H. Bannister, A. J. Martin, and H. W. Millmine, president and general manager, will be on hand to greet friends there.

•

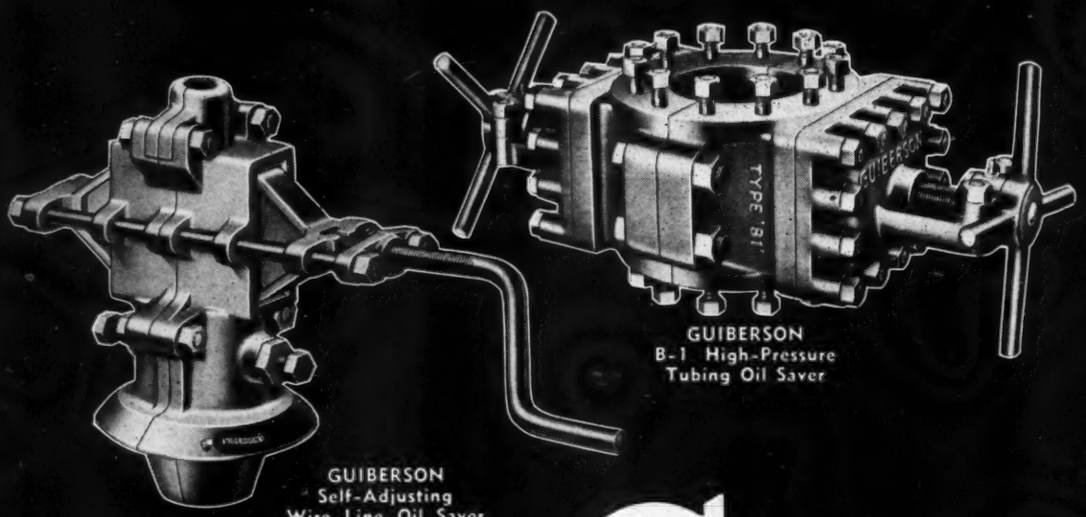
TEXAS STEEL COMPANY

Fort Worth, Texas

Booths Nos. 412 and 414 (Inside); 1008 and 1009 (Outside)

EXHIBIT: On the outside space — one small back-side pumping assembly and one

(Continued on page 157)



GUIBERSON
B-1 High-Pressure
Tubing Oil Saver

GUIBERSON
Self-Adjusting
Wire Line Oil Saver

GUIBERSON
Tubing
Stripper

SEE US AT

New Controlled-Pressure Drilling-In Equipment

One of the most important advances of the past year, in drilling equipment, has been the GUIBERSON "drilling-in-under-controlled pressure" completion equipment shown at left. With this equipment the operator is able to drill in using oil, a mixture of oil and gas, or gas alone as a circulating medium. Among its advantages are:

(1) Oil and gas can be produced while drilling in, as formations will produce through the light circulating column; (2) Well starts paying out when bit reaches sand, avoiding washing, swabbing or bailing time and expense; (3) Sands are not penetrated by water and mud but are brought in clean.

There are other advantages, also, which we will be glad to explain.

THE GUIBERSON CORPORATION

GUIBERSON
Friction Kelly Drive and Type "D" High Pressure Oil Saver for Drill Pipe or Tubing tested to 3,000 Lbs.

GUIBERSON
Collapsible Friction Kelly Drive, High-Pressure Drilling Head for Round Kelly, Quick Detachable Coupling, and Type "D" High-Pressure Oil Saver tested to 3,000 Lbs.

(Continued from page 153)

large assembly equipped with our largest safety automatic well hook-off device. This equipment will be connected directly to a reducer gear box by means of back-side crank equipment, the same that has been used on numerous four-well installations shown in recent publications. The company will install their most prominent under-pull cable head pumping jack, as well as the largest jack manufactured by them, both of which will be equipped with their special type of packing gland stuffing box bearings. Several other items of their surface equipment, connected directly with this gear box and back-side assembly, also will be shown.

For the inside space an individual twin crank wire line head pumping unit, which is an entirely new item added to their line of pumping equipment will be displayed. Also, various small items too numerous to mention.

Representatives: A. J. Armstrong, vice-president; and J. W. Emery, oil well supply sales manager.

•

THERMOID RUBBER COMPANY

Trenton, New Jersey

Exhibiting with Transportation Equipment Company.

•

THEW SHOVEL COMPANY

Lorain, Ohio

Exhibiting in Browning-Ferris Machinery Company section.

•

THORNHILL-CRAVER COMPANY

Houston, Texas

Booths Nos. 447 and 449

EXHIBIT: Display of Unibolt couplings.

Representatives: H. E. Thornhill, C. W. Thornhill, Kenneth Craver, T. W. Walker, R. S. Warren, George Collom, H. L. Duncan, Lester E. Peck, and F. L. Ledlow.

•

TIMKEN-DETROIT AXLE COMPANY

Detroit, Michigan

Exhibiting with Transportation Equipment Company.

•

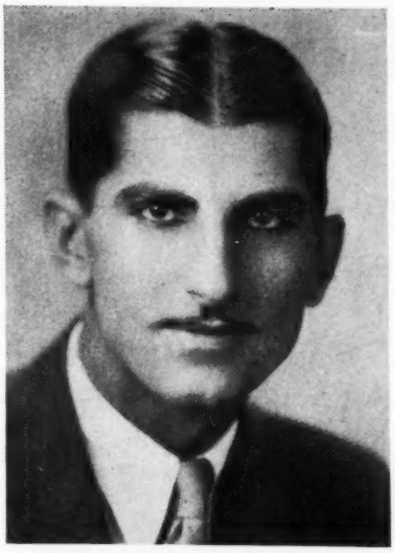
TIMKEN ROLLER BEARING COMPANY

Canton, Ohio

Booths Nos. 464 and 466

EXHIBIT: Against an illuminated background showing typical oil field equipment will be displayed a representative line of tapered roller bearings such as are used in oil field engines, pumps, powers, hoists, and swivels. Both single and double row bearings will be shown, together with the special flat type thrust bearing that is used in heavy swivel construction.

Representatives: W. B. Moore, general manager, Industrial Division; S. M. Weckstein, assistant chief engineer; John Borland, engineering department; H. W. Trump, manager Industrial Sales, Dallas, Texas. The Steel and Tube Division will be represented by Martin Fleischmann, metallurgical engineer, and D. T. Marvel.



M. T. HALBOUTY, Vice-President, Merit Oil Corporation, Houston, Texas.

W. T. BURTON, Independent Operator, Sulphur, Louisiana.

D. M. HARRELL, Superintendent, Coastal Plains Oil Corporation, New Iberia, Louisiana.

•

EDGAR TOBIN AERIAL SURVEYS

San Antonio, Texas

Booths Nos. 158 and 161

EXHIBIT: On display will be various photographic maps, ownership maps, regional control maps, and other material showing the nature of the map products of the company and illustrating the methods of their construction.

Representatives: Edgar G. Tobin, James Atkinson, Gus J. Groos, Jr., and others.

•

TRACKSON COMPANY

Milwaukee, Wisconsin

Booth No. 1025

EXHIBIT: Trackson Pipe Layers, used in the construction of pipe lines, will be on display.

Representatives: L. E. Dauer, sales manager; and I. W. Kunert, southern district representative.

•

TRANSPORTATION EQUIPMENT COMPANY, INC.

Houston, Texas

Booth No. 1013 (Outside)

EXHIBIT: Display will be of Marmon-Herrington all-wheel drive units, Timken two-speed and trailer axles, BK power brakes, DeLuxe oil filters, and other types of heavy-duty truck equipment.

Representative: Jack L. Parker.

•

TRETOLITE CORPORATION, LTD.

Webster Groves, Missouri

Booth No. 214

EXHIBIT: Tret-O-Lite for treating and conditioning crude oil.

Representatives: F. H. Penn, Dallas; K. R. Farr, Webster Groves, Missouri; and E. H. Dayvault, Houston, Texas.

•

TRINITY PORTLAND CEMENT COMPANY

Dallas, Texas

Booths Nos. 2 and 3

EXHIBIT: The exhibit will show the territory served as well as the following Trinity products: Trinity Standard Portland Cement, Trinity High Early Strength Portland Cement, Trinity Inferno (high temperature, sulphate resisting cement), Trinity Fibre Cement, Trinity-Mix Masonry Cement.

On display also will be two pieces of apparatus that will serve to emphasize the close control exercised by the company in making its products, as follows: First, a Christian Becker No. 15, Chainomatic Balance with a notched beam. This balance is of the latest type and equipped with

notched beam with ten intervals, each representing 100 mg., and a special rider and rider carrier, which together with the Chainomatic feature eliminates the necessity of any fractional weights below a denomination of one gram. This balance has a capacity of 200 g. and a sensitivity of one-twentieth mg. at full load or almost one two-millionth of a pound. This balance is used in analytical work in the laboratory and with it we can determine within a fraction of a percent the various elements that go to make up the finished cement.

The second instrument is the Comparator, which has been developed by the Portland Cement Association for the measurement of the expansion of 1 in. by 1 in. by 11¼ in. cement specimens. The length of these specimens are taken with the Comparator and then recorded. After that, the specimens are steamed for several hours at a pressure of 300 lb. per sq. in. at a temperature of 420 deg. fahrenheit. These specimens are then allowed to cool and their measurements again taken. The difference between this latter measurement and the one first taken represents the expansion of the cement. The Comparator is accurate to one ten-thousandth of an inch. and the slightest expansion or contraction of the specimens can be easily detected.

Representatives: Jack Barnes, petroleum engineer, East Texas and Louisiana district; Harry J. Sessums, petroleum engineer, West Texas district; and L. C. Doney, petroleum engineer, Houston and Gulf Coast.

•

TUBE-TURNS, INC.

Louisville, Kentucky

Booth No. 709

EXHIBIT: Complete line of Tube-Turns and other fittings for pipe welding.

Representatives: R. E. Fritsch and G. M. Pembroke.

•

TURBOLITE, INC.

Houston, Texas

Booths Nos. 509 and 511

EXHIBIT: Turbo-generators and bug fans will be on display.

Representative: B. B. Lacy.

•

TURCO PRODUCTS, INC.

Los Angeles, California

Booth No. 1209

•

TWIN DISC CLUTCH COMPANY

Racine, Wisconsin

Booths Nos. 432 and 434

EXHIBIT: Several different types of power take-off units, one stub shaft mounted clutch, one reduction gear, and several small clutches of various sizes will be shown.

Representatives: G. M. Guilbert, J. B. Jenkins, Soren Sorenson, and E. C. Billings.

FRED C. GREER, Drilling Contractor, Beeville, Texas.

H. L. CULLINS, Drilling Superintendent, Whitman Drilling Co., Corpus Christi, Texas.

TWIN SEAT VALVE COMPANY

Beaumont, Texas

Exhibiting with W-K-M Company.

•

U

UNA-WELD MANUFACTURING COMPANY OF TEXAS

Houston, Texas

Booths Nos. 1 and 6

EXHIBIT: On display will be the Una Automatic Continuous Arc Welder and Una Welding Rods. The Una line of rods consists of 36 different types to cover every phase of modern high-speed manual and automatic production welding, as well as maintenance work.

Representatives: W. B. Baker, vice-president and treasurer; and James Tate, sales engineer.

UNITED AMERICAN BOSCH CORPORATION

Springfield, Massachusetts

Booths No. 155 and 157

•

UNITED STATES GAUGE COMPANY

New York, New York

Exhibiting with Allen, Sproull & Allen.

•

UNITED STATES STEEL CORPORATION SUBSIDIARIES

Pittsburgh, Pennsylvania

Booths Nos. 264, 364, 365, and 464

EXHIBIT: The following subsidiary companies will be represented: American Steel & Wire Company, Carnegie Illinois Steel Corporation, Cyclone Fence Company, National Tube Company, Tennessee Coal, Iron & Railroad Company, Universal Atlas Cement Company.

In the center of the display will be a large diorama of an oil field, traveling in front of this will be five model trucks. These little trucks will carry USS American Tiger Brand Cables and each time a truck appears in front of the diorama an inscription will flash on telling about USS American Tiger Brand Wire and the various samples that the trucks are carrying.

At each side of this central display will be two life-size tigers, the familiar symbol of the American Steel & Wire Company. To add that picturesque jungle note, the tigers' heads will be in motion. At the left will be a large panel of factory protection fence made by the Cyclone Fence Company. This fence will be protecting a photo-mural showing the typical installations of Cyclone Factory Protection Fence, and the proper installations in various oil field locations.

At the right, three types of cement will be graphically portrayed by models, photographs, and samples. These new cements are Uniflow, Lumnite, and Atlas, all made by the Universal Atlas Cement Company. Several small models will be mechanically operated to show the uses and advantages of these three advanced types of cements.

In addition, a small diorama will show USS roofing and siding products. By means of sample boards and dioramas, new types of roofing will be shown and described.

•

UNIVERSAL ENGINEERING COMPANY, LTD.

Los Angeles, California

Booths Nos. 358 and 360

•

V

THE VAPOR RECOVERY SYSTEMS COMPANY

Compton, California

Booths Nos. 1117 and 1119

EXHIBIT: The following equipment will be exhibited: conservation vent valves, flame arresters, swing line equipment, auto-

YOUR VISIT..

Whether you spend an hour, a day or two, or perhaps a week at the Oil-World Exposition—you will go away happy in the knowledge you have made new acquaintances and renewed many old friendships. Friendships in the Petroleum Industry are built on a solid foundation of common interest and understanding of mutual problems. We hope to meet many old friends and new acquaintances as they visit us in Spaces Nos. 350, 352, 354, 356 and 451, 453, 455, 457 in Convention Hall where a most cordial welcome awaits them.

FRICK-REID
SUPPLY CORPORATION
PITTSBURGH, PA. TULSA, OKLA.
BRANCHES IN OLD AND NEW FIELDS
EQUIPMENT SUPPLIERS EXCLUSIVELY

matic tank gauges, vapor-recovery regulators, and gas-tight hand gauges.

Representatives: Frank V. Long, president; and H. C. Newman, Mid-Continent manager.

•

VERNON TOOL COMPANY, LTD.

Los Angeles, California

Booths Nos. 331 and 333

EXHIBIT: Exhibit will be in conjunction with the McNeely Materials Company of Houston, Texas, Mid-Continent-Gulf Coast distributors for Vernon Tool Company. On display will be the new Model E-5 McNeely vibrating mud screen, and a line of auxiliary driving equipment, such as electric motors, steam turbines, and gasoline engines.

Representative: J. W. McNeely.

•

VICTOR WELDING EQUIPMENT COMPANY

San Francisco, California

Booths Nos. 735, 737, and 739

EXHIBIT: Victor gas welding and cutting equipments, including various sizes of welding and cutting torches, regulators, etc., will be displayed. The exhibit will be with the Big Three Welding Equipment Company.

•

VISCO PRODUCTS COMPANY

Houston, Texas

Booth No. 1328

•

HENRY VOGT MACHINE COMPANY, INC.

Louisville, Kentucky

Booths Nos. 715 and 717

EXHIBIT: A complete line of drop-forged steel valves, fittings, and flanges will be displayed.

Representatives: G. A. Daeuble, Jr., W. S. Cannon, Jr., and J. L. Massie.

•

VOLCANO BURNER COMPANY

Houston, Texas

Booths Nos. 1334 and 1336

EXHIBIT: On display will be various types of all-steel low-pressure gas burners manufactured by the company—the Gulf State, Volcano, Bearcat, and the new Superior. The latter will be featured. It is a unitized type burner, either with or without automatic draft control.

Representatives: Roy S. Dodd and J. H. Mitchell.

•

VORTOX MANUFACTURING COMPANY

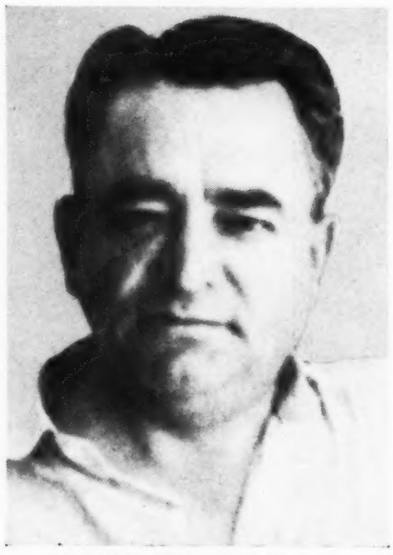
Claremont, California

Booth No. 656

EXHIBIT: A number of Vortox air cleaners, breather caps, and fittings, as well as some assemblies, including cleaners and fittings, used in the oil fields will be shown. A working model will be in operation showing the oil action in the air cleaner and how the unit functions.

Representatives: C. C. Sowerby, Houston, factory representative, will be in charge of the exhibit. Other representatives will be present also.

J. O. WALKER, Superintendent, Pan American Production Co., Houma, Louisiana.



LEE DAVIS, Independent Operator, McAllen, Texas.

•

W

W-K-M COMPANY, INC.

Houston, Texas

Booths Nos. 504, 506, 508, 510, 605, 607, 609, 611 (Inside); 1002 (Outside)

EXHIBIT: The company's complete line of oil-field equipment will be on display, including the following items: rotary slips, tubing slips and spiders, mud screen, round kelly drive, drawworks brake bands, twin-seat valves, liner pullers, well bore cleaner and casing centralizer, portable and stationary sucker rod hangers, portable pipe straightener, lubricated hinge pins, centrifugal separators for desanding rotary drilling muds, steam separator and automatic lubricator for engines and pumps in drilling operations, tubing catchers, W-K-M oversize standing valve, Everlasting valves, W-K-M through-conduit lubricated gate valves, pipe cleaning machine, Hauser drive, and water softner. Equipment displayed is that made by W-K-M and also by other manufacturers for whom they are distributors.

Representatives: Fred McManis, president; Lee O. Koen, vice-president; J. D. Rice, secretary; L. C. Witten, treasurer; M. P. Laurent, engineer; and George Franks, engineer. *Sales Department:* F. M. Black, A. B. Calkins, R. C. Calkins, George A. Clarke, H. B. Cookston, T. L. Putnam, T. Monroe Smith, G. M. Stewart, J. M. Wallace, R. N. Wright, H. E. Robson, Joe Sink, E. L. MacBlain, George E. Mason, W. D. Mercer, C. A. Morgan, W. C. Morgan, A. T. Donnelly, W. H. Eason, G. M. Finfrock, D. M. Griffith, W. A. Hammann, and T. O. Ferguson.

•

WALWORTH COMPANY, INC.

New York, New York

Booths Nos. 658, 660, 759, and 761

EXHIBIT: The company will display its line of valves, fittings, and tools, featuring such items as: the new bronze valve, Fig. 225P, which has a seat and disc of high chrome stainless steel heat-treated to a minimum Brinell hardness of 500. This valve is supplied in sizes from ¼ in. to 2 inches. Also, will show its mud line valves; its Fig. 85 flow line drilling gate valve, and its line of lubricated plug valves. Walco pipe wrenches and Walworth genuine stillson wrenches also will be on display.

Representatives: Howard Coonley, chairman; W. B. Holton, Jr., president; F. W. Duemler, vice-president of sales; F. H. Morehead, vice-president of engineering; J. M. Olmstead, vice-president of sales; C. L. Bradbury, manager, Dallas office; W. M. Combs, manager, Tulsa office; C. G. Finkle, manager, Houston office; E. L. Clark, in charge of oil field sales; and H. C. Nannen, in charge of refinery sales.

•

WELL EQUIPMENT COMPANY, INC.

Houston, Texas

Booths Nos. 1314, 1316, and 1318

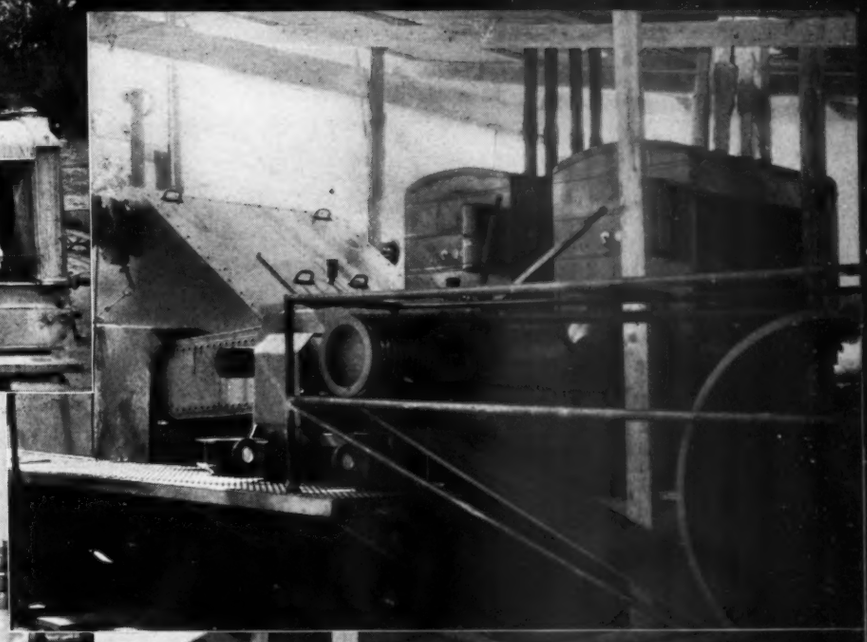
EXHIBIT: Full line of the company's equipment will be on display. Among the items shown will be wing unions, oil saver, valve speed handle, compounding valve, lubricated plug valves, boiler blow-off valves slush pump liner sleeves, steam line lubricators, steam drilling engine lubricators, water heater manifolds, pressure gauge stabilizer, swabs, etc.

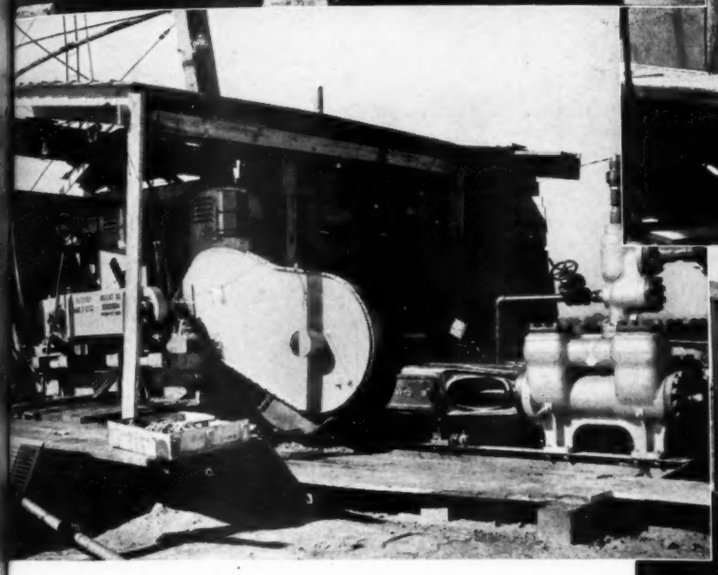
Representatives: C. K. Stillwagon, president; and S. H. Smith.

PUTTING POWER TO WORK

WITH

TWIN DISC CLUTCHES





A small part with a big reputation for performance—Twin Disc is the one oil field clutch that is accepted by pioneer oil field operator, engine maker, and rig builder alike.

Twin Disc Clutches have definitely proven their ability to harness the power of the prime mover to the driven rig. In rotary drilling, heavy duty pumping and hoisting they provide simplified, dependable control. Scientifically designed and precision built—they are at once big enough and strong enough to carry peak and shock loads with safety.

Seventeen years' close cooperation with the oil field industry in solving its clutch problems makes the advice of Twin Disc Engineers decidedly valuable to you. Write for specific recommendations. Engineering data on request.

TWIN DISC CLUTCHES

TWIN DISC CLUTCH COMPANY

1329 RACINE STREET — RACINE, WISCONSIN

SALES AND SERVICE OFFICE

310 E. 4TH STREET — TULSA, OKLAHOMA

BOOTHS 432-434 OIL WORLD EXPOSITION, HOUSTON

WESTCOTT AND GREIS, INC.

Tulsa, Oklahoma

Booths Nos. 728 and 730

EXHIBIT: The display will consist of water meters, oil meters, and gasoline meters of the Buffalo Meter Company, Buffalo, New York; Robinson Orifice Fittings of the Robinson Orifice Fitting Company, Los Angeles, California; small high-pressure regulators of the Chaplin-Fulton Manufacturing Company, Pittsburgh, Pennsylvania; Style 65 fittings and various types of couplings of the S. R. Dresser Manufacturing Company, Bradford, Pennsylvania; motor valves, float valves, solenoid operated balance valves and back-pressure regulators of the Davis Regulator Company, Chicago, Illinois; recording gauges and thermometers, metameters, pyromaster controllers, potentiometer recording controllers of the Bristol Company, Waterbury, Connecticut; high-pressure balance valve regulators, house type regulators, appliance regulators, and gas filters of the Reliance Regulator Corporation, Alhambra, California; orifice meters, reset controllers, long distance recorders, and positive meters, base pressure indexes, indicating gravitometers of the American Meter Company, Erie, Pennsylvania.

Representatives: J. H. Satterwhite, manager; H. W. Wahl, Dallas; C. C. Clover, Tulsa; R. A. Marsh, Houston; R. L. Armitage, Tulsa, and A. F. Benson, engineer, of the American Meter Company, Erie, Pennsylvania, also will be present.

•

WESTCOTT VALVE COMPANY

East St. Louis, Illinois

Exhibiting with Continental Supply Company.

•

WESTERN BLOCK COMPANY

Lockport, New York

Exhibiting with Norvell-Wilder Supply Company.

•

WESTERN SAND-BANUM COMPANY

Houston, Texas

Booth No. 232

EXHIBIT: Exhibiting with American Sand-Banum Company.

Representatives: L. Bradie, Frank J. Welu, Paul P. Elliott, and A. J. Maxwell.

•

WHEELER REFLECTOR COMPANY

Boston, Massachusetts

Booths Nos. 939 and 941

EXHIBIT: The following types of lighting equipment will be shown: explosion-proof fixtures, vapor-proof fixtures, flood lights, gasoline pump island lights, and sign lighting equipment.

Representatives: H. A. Barnes, sales manager; L. F. Carleton, Texas representative; I. L. Henderson, Texas representative; and Marvin Bell, Texas representative.

J. E. SUTTLES, Partner, Guy Drilling Company, Houston, Texas.

J. E. BRANTLEY, Drilling and Prod. Supt., Barnsdall Oil Corp., Houma, Louisiana.

THE WHELAND COMPANY

Chattanooga, Tennessee

Houston Oil Field Material Company Section

EXHIBIT: At present the company is constructing a 15½-in. by 8-in. by 20-in. duplex steam slush pump that they state is a marked departure from the usual slush pump. It is likely this equipment will be completed in time to go on display.

Representatives: G. E. Campbell and C. W. Wheland.

•

WHITLOCK CORDAGE COMPANY

New York, New York

Exhibiting with Frick-Reid Supply Corporation.

WHITNEY CHAIN & MANUFACTURING COMPANY

Hartford, Connecticut

Booths Nos. 659 and 661

•

WICKWIRE SPENCER STEEL COMPANY

New York, New York

Booths Nos. 164 and 166

EXHIBIT: Certain of the company's facilities to completely control the production of wire rope from the ore to the final laying operation at the Palmer, Massachusetts, plant will be presented pictorially. The display also will feature a presentation of the company's wire rope manual, "Know Your Ropes," and will include, too, the display of two or more reels of the rope itself.

Representatives: R. J. Jones, Jr., O. C. Elliott, E. J. Daly, D. J. Henecker, and K. A. Zollner.

•

WICO ELECTRIC COMPANY

Springfield, Massachusetts

Booth No. 700

EXHIBIT: Complete line of oil field and industrial Wico magnetos, including all the latest types for trucks, tractors, and gas engines, will be displayed.

Representatives: H. L. Hart, Springfield general sales manager; V. K. Hunt, Springfield, sales manager, Trade Sales Division; L. F. Smith, Tulsa, Oklahoma, Southwest District manager; and J. M. Jordan, Tulsa, sales department.

•

J. H. WILLIAMS & COMPANY

New York, New York

Booths Nos. 115 and 117

EXHIBIT: Display will consist of two animated boards and six large tool display panels. On one motion board will be shown the "Boll-Weevil Zephyr" chain pipe tong in an actual moving demonstration of how it is used in turning a piece of pipe in the forward and reverse action. On the other motion board will be shown a tool holder mounted on an outline of a lathe with a steel turning supposedly being machined off a steel disc. The display panels mounted at the rear and on the sides of the exhibit will show the special cracking unit socket wrenches, the non-sparking beryllium copper wrenches, the Superector line, adjustable wrenches, as well as all the latest pattern socket, open-end, and box wrenches. A chain pipe tong display rack containing the new Supertong will be shown, and also a panel of special forgings.

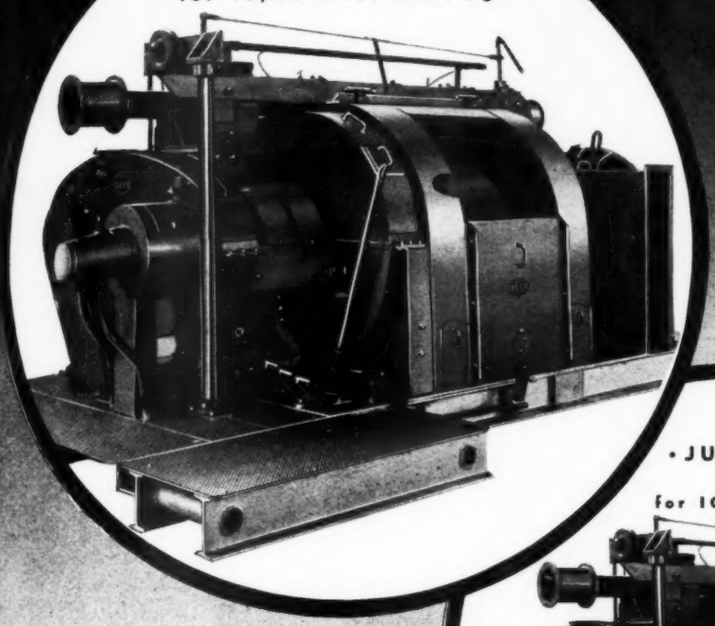
Representatives: J. H. Williams, president; E. J. Wilcox, sales manager; and Messrs. Silliman and Wells, sales representatives.

IDECO

GIANT DRAW WORKS

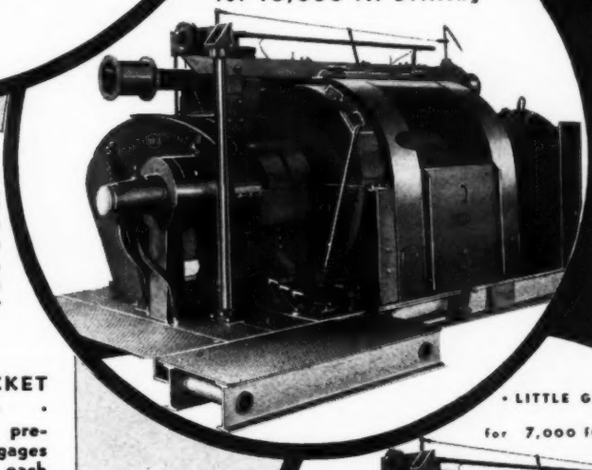
• BIG GIANT •

for 15,000 ft. Drilling



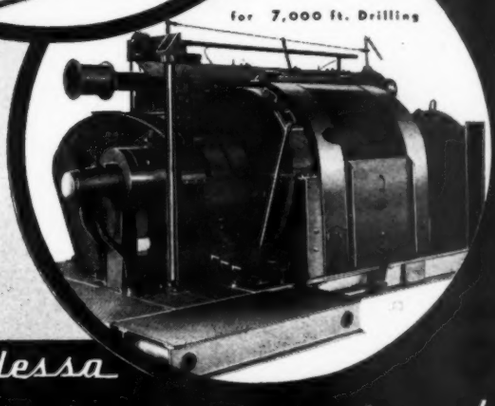
• JUNIOR GIANT •

for 10,000 ft. Drilling

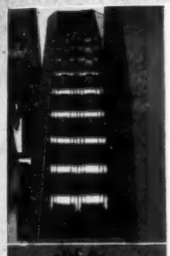


• LITTLE GIANT •

for 7,000 ft. Drilling

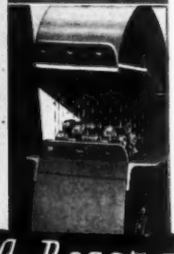


Give you the **PROFITS** *derived from* **LONG CHAIN LIFE**



DOUBLE STRAND CHAIN having a pitch of 3⅛" will outwear A.P.I. No. 4 chain due to its shorter pitch and higher speed capacity. The chain has a minimum ultimate strength of over 250,000 pounds.

MACHINE CUT SPROCKET TEETH . . . . . manufactured with such precision that the chain engages the sprocket uniformly — each link of the chain carrying its share of the load.



ENCLOSED PRESSURE SPRAY OILING SYSTEM . . . furnishes a constant supply of fresh, clean oil to the chain under pressure, forcing the oil between the side bars and between pins and bushings. System is completely enclosed.

A Record Performance in Rodessa

over 50,000 **FEET** *without a single chain failure . .*

THE INTERNATIONAL DERRICK & EQUIPMENT CO.

DIVISION OF INTERNATIONAL-STACEY CORPORATION

Beaumont, Texas - Columbus, Ohio - Los Angeles, Cal.

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AN INTERNATIONAL ORGANIZATION DEVOTED TO ENGINEERING, BUILDING AND DISTRIBUTING OIL FIELD EQUIPMENT

Branches in All Active Fields

THE D. T. WILLIAMS VALVE COMPANY

Cincinnati, Ohio

Exhibiting with Allen, Sproull & Allen

•

WILLIAMSPORT WIRE ROPE COMPANY

Chicago, Illinois

Booth No. 559

EXHIBIT: A series of miniature wire rope making machines will be shown. These machines demonstrate in miniature the complete operation of wire rope laying.

Representatives: Raymond E. Ford, J. A. Dudley, S. L. Tennant, Ralph Fesemyer, Wayne Johnson, and C. P. Phelps.

•

WILSON MANUFACTURING COMPANY

Wichita Falls, Texas

Booth No. 1022 (outside)

EXHIBIT: Wilson portable rigs, Titian and Giant models; Wilson truck type clean-out machine, and Wilson free-rolling drum motor winch.

•

WILSON SUPPLY COMPANY

Houston, Texas

Booths Nos. 234, 236, 238, 240, 339, and 341

EXHIBIT: The Nixon Gas-Lift Control System will be featured. Also exhibited will be Wilson-Snyder slush pumps, Watson Stillman forged steel fittings, Stanley G. Flagg and Company cast and malleable fittings, D. T. Williams Valve Company valves, Gray Swivels, and Sievers reamers. Numerous other items of equipment also will be shown.

•

WEB WILSON

Huntington Park, California

Exhibiting with W-K-M Company.

•

WORTHINGTON PUMP & MACHINERY CORPORATION

Harrison, New Jersey

Exhibiting with Houston Oil Field Material Company.

•

WRIGHT MANUFACTURING DIVISION OF AMERICAN CHAIN AND CABLE COMPANY, INC.

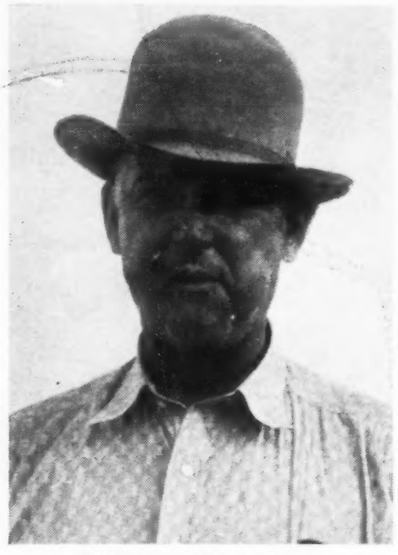
York, Pennsylvania

Booth No. 727

EXHIBIT: Display of hoists.

Representatives: C. B. Veit, sales manager; and D. R. Smith, district manager.

T. J. HATHAWAY, Superintendent, Nicklos Drilling Company, Houma, Louisiana.



S. RHODES, Drilling Contractor, Jennings, Louisiana.

Y

YOUNG RADIATOR COMPANY

Racine, Wisconsin

Booths Nos. 1304 and 1306

EXHIBIT: The main exhibit will be the engine jacket water cooler, designed to replace the present cooling system, cooling tank, or cooling tower used in the oil fields. This unit is sturdily constructed, has a welded steel frame, and is supplied with or without an idler and pump. One of the features of this unit is the ease in which the core may be removed from the frame and cleaned, if necessary. The top and bottom tanks are made of sheet copper, having brazed joints and there is no possibility of the unit developing leaks that would be caused by any corrosive acid that would attack iron, as the core and tank assembly consists entirely of copper, the makers state. Also on exhibit will be several radiators that the company manufactures for industrial engine companies, as well as a heat exchanger for engine cooling, consisting of a tube bundle from which the jacket water is circulated, and cold water circulated around the tube bundle. A few products of the company's heating division and air conditioning departments, namely: a convector radiator complete with cabinet and also a unit heater, will be shown.

Representatives: J. J. Hilt, vice-president and sales manager; W. L. Walton, sales engineer; and C. F. Cushman, sales department.

•

YOUNGSTOWN SHEET AND TUBE CO.

Youngstown, Ohio

Exhibiting with Continental Supply Company.

•

YOUNGSTOWN STEEL PRODUCTS CO.

Youngstown, Ohio

Exhibiting with Continental Supply Company.

•

Z

JOHN ZINK COMPANY

Tulsa, Oklahoma

Booth No. 145

EXHIBIT: Products displayed will include: Bi-Mix short flame burners, combination gas and oil burners, low-pressure multi-jet Bi-Air burners, low-pressure heating burners, domestic burners, acid sludge burners, round flame outside mix and round flame inside mix steam atomizing oil burners; straightening vanes. Reid screen type, tubular type, cast-iron wing type; louver type oil and gas burners.

Representatives: John Zink, James A. Morgan, and S. F. Smith.

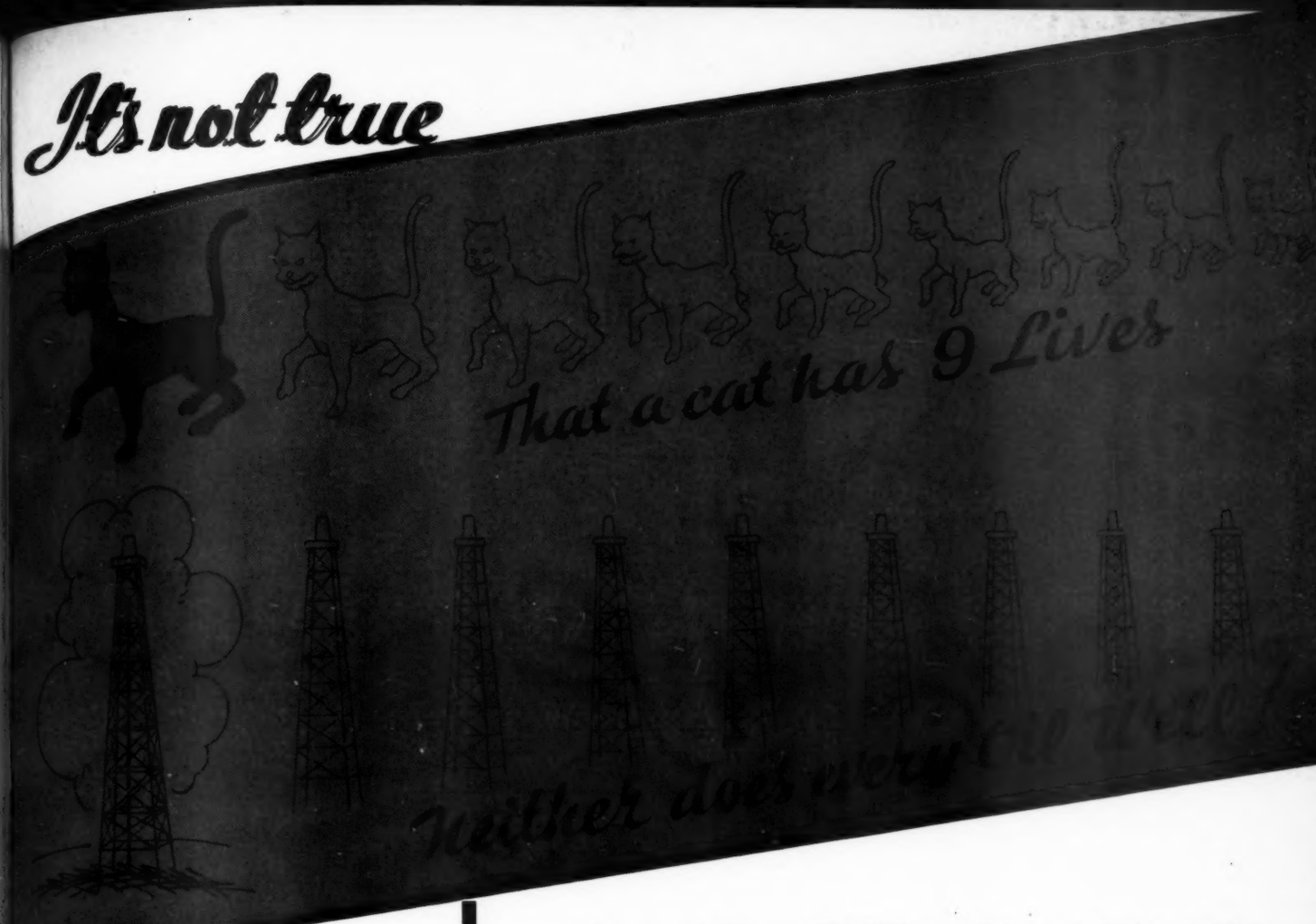
•

Additional information on exhibit of

MID-CONTINENT SUPPLY COMPANY

Fort Worth, Texas

Multi-Seal Rivets—A new idea for repairing and construction of all kinds of equipment with 2500 applications for maintenance engineers, shop foremen, construction engineers, contractors, and mechanics in all fields. This exhibit and demonstration will show how the Multi-Seal Rivet upsets its own sealing rivet head on the opposite side of the work, forms three distinct sealing surfaces of all metal, expands and compresses filling in any irregular hole at the same time, following the outside and inside surface irregularities or angles, such as corners or overlapping seams, seals cracks from inside and outside with metal flow between, will withstand over 3000 lb. internal pressure.



DON'T KILL YOUR WELL

In many instances KILLING a well has resulted in total or partial loss of production due to mudding off producing formations. It is not necessary to run this risk on YOUR WELL! Practically every well operation can be accomplished under pressure with Otis Equipment and Service.

TUBING, PACKERS, DRILL PIPE, or CASING SAFELY RUN OR PULLED UNDER PRESSURE with Otis Snubbing and Control Equipment by EXPERIENCED Otis Crews.

PRESSURE-CONTROL DRILLING, CLEANING OUT OF WELLS, AND WELL COMPLETIONS UNDER PRESSURE with Otis Square Kelly Drilling Head and pressure-control drilling equipment.

SURFACE CONNECTIONS REMOVED OR CHANGED WITHOUT KILLING YOUR WELL BY PLUGGING TUBING OR CASING with an Otis Removable Bottom Hole Choke or Otis Removable Casing Plug.

The above and other Otis equipment will be on display at Oil-World Exposition, Booths 1324-26, Houston, October 11-16.

OTIS PRESSURE CONTROL, INC.
Tower Petroleum Building
DALLAS, TEXAS

Oklahoma City, Oklahoma
Ada, Oklahoma
Houston, Texas
Kermit, Texas

PRESSURE CONTROL - OTIS - SERVICE - EQUIPMENT
TRADE-MARK

Hobbs, N. M.
Rodessa, La.
Glendale, Cal.
Wellsville, N. Y.

CALL OTIS

Missouri River crossing. Laying and tying-in first of four 12-in. river lines on south bank. The line is graded down sharply from the Missouri Pacific Railroad tack and curved upstream where it will cross the river as the west line of the four submerged carriers

Construction Program of Panhandle Eastern Enlarges Facilities

By J. STANLEY STEVENSON

Chief Engineer, Panhandle Eastern Pipe Line Company

Eight main line loops, extensive gathering system, erection of a new compressor station, additions to nine existing stations, as well as to gasoline and dehydrating plant, a part of program now nearing completion

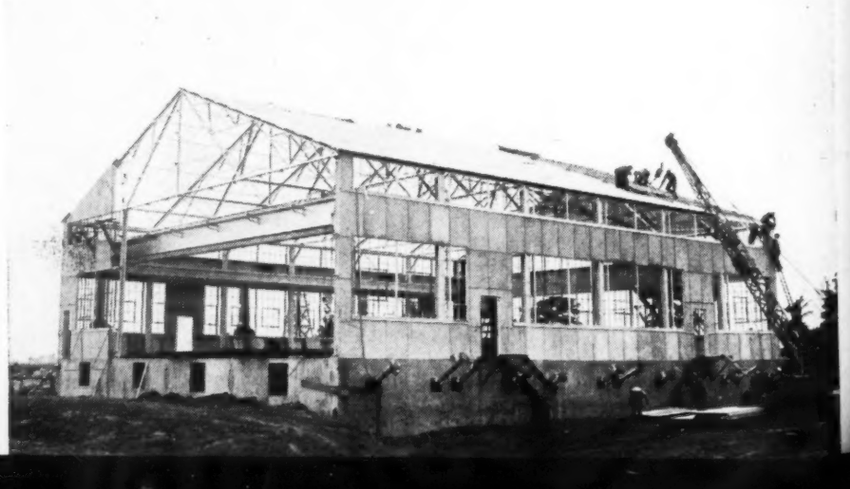
THE second phase of Panhandle Eastern Pipe Line Company's expansion program, consisting of the construction of eight main line loops and an extensive gathering system, the drilling of additional wells, the construction of a new compressor station, additions to nine existing stations, gasoline and dehydrating plant, is expected to be completed in October.

A brief review of Panhandle Eastern's 1936 construction activities, coincident with the completion of natural gas transmission facilities by Michigan Gas Transmission Corporation, which enabled Panhandle to deliver natural gas to Detroit early in July last year, should assist the reader in visualizing the scope of the project Panhandle Eastern has carried out during the past two years. Increasing the main line compressor horsepower of the Panhandle System by adding 29,300 hp. was considered one of the principal construction activities of the industry in 1936 and marked the first major addition to Panhandle's transmission facilities since the completion of its main line late in 1931. Contracts were entered into in the spring of 1936 for the construction of seven new compressor stations involving 27,300 compressor hp. and the addition of 2000 hp. to an existing station. A gasoline extraction and natural gas dehydrating plant was constructed as a part of the year's work. In addition to constructing 230 miles of 22-in. gas line from a point near Indianapolis, Indiana, to Detroit, the Michigan Gas Transmission Corporation built a 2600-hp. station on its main line near Montezuma, Indiana. All new stations were in operation by the latter part of November, 1936.

Panhandle's 1936 pipe line additions were limited to a double 12-in. submerged river crossing of the Mississippi River near Louisiana, Missouri. The original 22-in. main line crosses the river at Louisiana on the Champ Clark Memorial Bridge. Supplementing the single line on the bridge the two smaller lines were laid in the river bed under a permit issued by the War Department. The lowest recorded river stage at this point was experienced during the construction of the crossing. This work was completed early in the fall of 1936.

1937 Requirements Planned

Prior to the completion of 1936 main line additions, the company's engineering department began work on a series of capacity studies that showed the necessity for the drilling of additional wells, the building of additions to the company's gathering system, the installation of main line loops, the increasing of horsepower of existing stations, and the construction of an additional compressor station in order to provide sufficient delivery capacity to meet contractual commitments. Final design of 1937 loops was based upon



Main building of the new Tuscola station. View shows crew placing asbestos-cement roofing

a study of estimated ultimate maximum system deliveries in order that loop diameters would conform to ultimate requirements. The theoretical lengths of all loops were varied slightly when constructed in order that each loop would end opposite an existing main line gate. Maximum operating pressure of 500-lb. gauge was adopted.

Following reconnaissance work on the proposed route of the loops four survey parties were sent to the field early in March, 1937. Strip maps of the loop locations made from notes provided by the survey parties were promptly prepared and supplied to the land department for use in obtaining rights-of-way and highway, railroad crossing, and other necessary permits.

Forms of construction contracts, plans, specifications and maps of the loops were prepared and mailed to prospective bidders March 31, 1937. Proposals were submitted April 16 and successful bidders were notified promptly thereafter. For convenience, the four Kansas loops, namely, Liberal, Greensburg, Haven, and Olpe, were designated as the "Western Section" and the remaining loops the "Eastern Section."

Pipe Line Contracts Awarded and Work Started

Construction of the Western Section, consisting of 147.20 miles of 24-in., and 4.51 miles of double 18-in. pipe line, was awarded to T. R. Jones, Inc., Dallas, Texas, and the Eastern Section, exclusive of the Missouri River crossing, to E. H. Reeder Construction Company, Dallas, Texas, W. S. Bibb in charge. The latter section consists of 79.85 miles of 24-in., 43.78 miles of 22-in., 1.13 miles of double 18-in., and 3.89 miles of single 18-in. pipe line.

C. Hobson Dunn, sub-contractor for T. R. Jones, Inc., started stringing on the Liberal loop May 13. The laying gang laid the first pipe three days later, beginning at Liberal Station. Severe dust storms hampered the operations of stringing and construction crews during the first two or three weeks of activity, completely stopping all work on several occasions. Sand dunes and "blow" sand encountered later on the Greensburg loop slowed down progress, and all activity was again stopped for several days by reason of heavy rains and mud on the Haven loop.

Stringing was begun on the Louisburg loop of the Eastern Section by the Parkhill Trucking Company, subcontractor, May 11, and the first pipe was laid May 17. In contrast to the drought of 1936 and the dust storms that were hindering the work of the gangs on the Liberal loop, Missouri and Eastern Kansas experienced rains of near-cloudburst proportions that brought all pipe line construction in that area to a stand-still.

All loops were constructed on the downstream side of compressor stations.

Although common labor was employed locally insofar as practicable, the housing of the many other construction employees and their families frequently created an acute housing shortage in the small towns along the route of the loops.

Dead-weight leakage tests following the Bureau of Mines method were run on all loop lines promptly following completion.

Pipe and Gate Valves

General specifications of the 24-in., 22-in., and 18-in. O.D. line pipe included the following:

Length of pipe, 40 ft.

Wall thickness, $\frac{D}{32}$-in.

Minimum yield, 42,000 lb. per sq. in.

Minimum ultimate tensile strength, 70,000 lb. per sq. in.

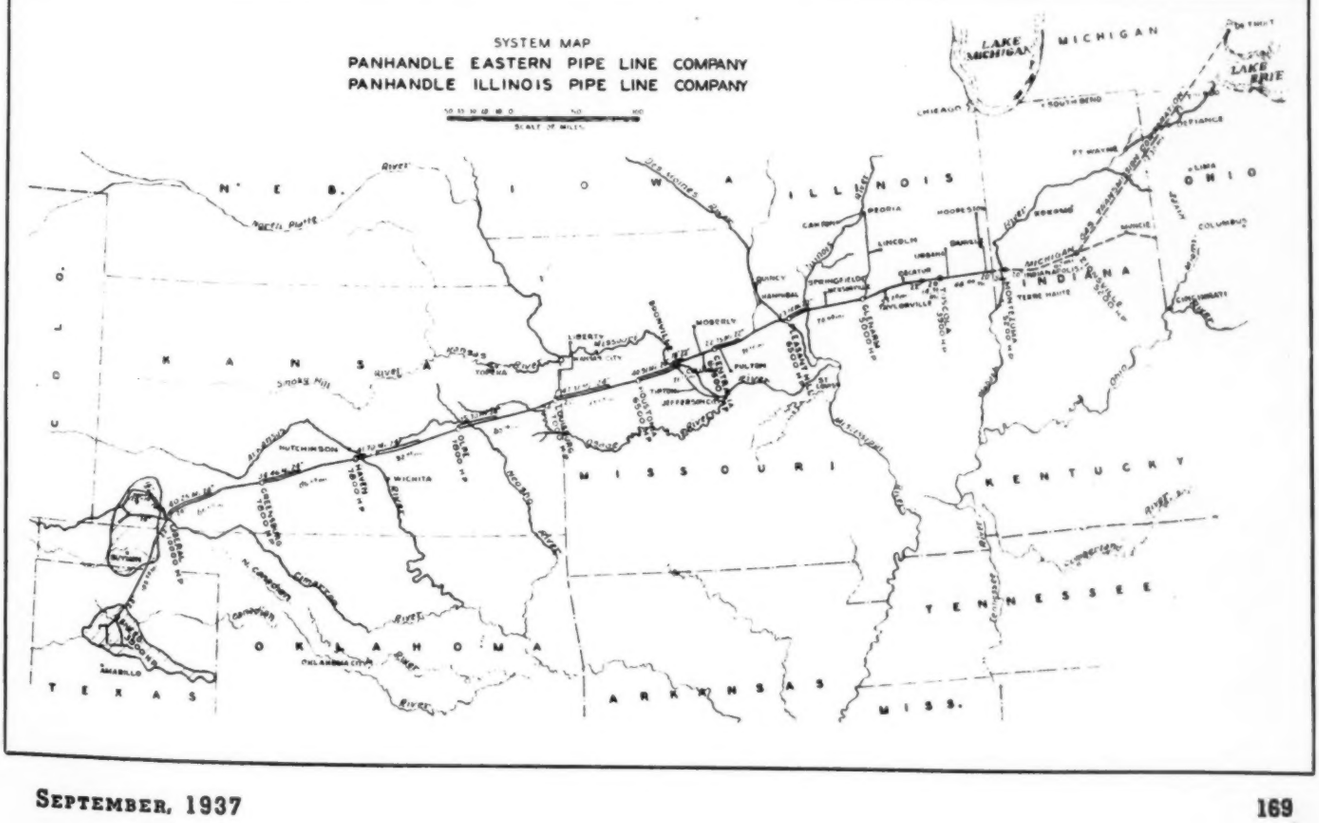
Minimum elongation in 2 in., 25 percent.

Maximum carbon content, .30 (check).

Mill test pressure, 750 lb. hydrostatic.

Ends, beveled 30 deg. with a width of flat at ends of pipe of $\frac{1}{16}$ in. plus or minus $\frac{1}{32}$ in.

Finish, reamed inside and out, 12-in. smooth end finish, bare with no mill primer.



Priming 24-in. Haven loop near Newton, Kansas, using gasoline-engine-driven priming machine

Ladle analyses were to conform to:

Carbon, .20 to .30 percent.

Manganese, not more than .95 percent.

Phosphorus, not more than .045 percent.

Sulphur, not more than .050 percent.

Inspection service at the mills was provided by Robert W. Hunt Company, Chicago, and Moody Engineering Company, New York City.

Main line gate valves were of the venturi type, 24-in. by 20-in., 22-in. by 18-in., iron body, double disc, O. S. & Y., flanged ends, series 30 drilling, with bronze stem, bronze seat ring, and bronze-trimmed discs, spur-gear operated, 500-lb. gas working pressure, hydrostatically tested to 800 pounds.

Features of Pipe Line Construction

The desirable minimum distance of all loops from the original line was established as 50 feet. Where rock was encountered and blasting required, this distance was increased to 75 ft. and where houses or natural obstacles prevented laying the new lines the minimum distance from the old line, the new route was situated a greater distance from the original line.

In general, composite construction was employed; two 40-ft. lengths were welded together and the resulting 80-ft. sections were joined with Dresser couplings. Trenches were dug to a depth that provided a minimum cover of 30 in., except that for overbends the minimum cover was increased to 36 inches. Where vertical deflections in alignment exceeded 2½ deg. the trench was graded.

All pipe was shipped without mill primer and after delivery was cleaned and primed on the outside with traveling type, motor-driven cleaning and priming machines. Pipe was then coated with a hot coat application of enamel that was tested for pin holes, holidays, and thin spots with an electrical holiday detector.

Adjoining lengths of pipe were tacked at four points 90 deg. apart before the main weld was begun and the well was completed on adjustable dollies. Electrical welding was used exclusively on all pipe above 6 in. in diameter. H. C. Price Company, Bartlesville, Oklahoma, had the subcontract for this work on both sections.

Drawings showing details of fabrication and installation of drips, main line gates, side gates, headers, manifolds, taps, blow-offs, reinforced joints, river crossings, clamps, and other appurtenances were prepared by the pipe line company and supplied to the contractors for their guidance. Four especially designed reinforced concrete thrust blocks were constructed at the ends of each loop. The T-shaped blocks, each containing almost six cu. yd. of concrete were poured against undisturbed earth and anchored to the pipe by the use of steel thrust saddles. The saddle, semi-circular in section and made of pipe of the same diameter as the line, had anchoring fins bedded deeply in the concrete. The pipe was welded to the saddle and in addition was bolted and clamped to the block. Welding heads, welding saddles, welding flanges, and fabricated piping were specified for all connections and attachments.

Flexibility of control of gas flow is assured by the installation of interconnecting lines between the old line and the loops at each main line gate. These lines are connected between the gate valve by-pass headers on the old line and similar by-passes on the loops. Full-size blind flanges were installed on the ends of all loops, providing for future extensions.

A new main line check measuring station was constructed on each line near Harrisonville, Missouri. Interconnecting lines are installed between main line gate valves on the two main lines, on each side of the measuring station, providing a means of by-passing either station.

Gathering System

Early in September I. C. Little, Dallas, Texas, completed the construction of an extensive gathering system designed to deliver gas from wells in four Kansas counties to Liberal station. Beginning at a point in Sec. 24, Twp. 29S, Rng. 36W, Grant County, Kansas, a 16-in. pipe line extends southeasterly a distance of ten miles to a point where it connects with an 18-in. line; the latter continues in a southeasterly direction for approximately 25 miles to the compressor station in southeastern Seward County. A 16-in. branch line, beginning near the junction of the 16-in. and 18-in. on the main gathering line extends southwesterly across the Cimarron River and thence west along the north line of Stevens County for a distance of about ten miles, to a point where the pipe size is reduced to 12¾ in. and continues westward approximately seven miles.

River Crossings

Three rivers and the flood plains adjacent thereto are each crossed by two 18-in. O.D. lines and the Missouri River by four 12¾-in. O.D. lines, all of the submerged type. The Arkansas River crossing is 1.1 miles long. An interconnection was provided between the new and old crossings near the west headers. The Neosho River lines near Emporia, Kansas, are 3.41 miles long, providing protection across the low lands subjected to floods. The headers of the Lamine River on the Houstonia loop are 1.13 miles apart.

These lines are solid welded from header to header. Steel welding sleeves were applied to joints in the channel of streams with cast-iron river clamps

(*Continued on Page 174*)

ETY!

True, because it functions so perfectly, the navigator soon becomes accustomed to the "course-light" which guides and protects him.

In hundreds of refineries the world over, a similar tribute of being taken for granted is paid Smith Pressure Vessels. In hundreds of refineries, men who know fully of the high temperatures and pressures within, work calmly in the shadow of Smith Vessels.

These men can take the *safety* of Smith Pressure Vessels for granted because Smith engineering and manufacturing take *nothing* for granted.

Smith Pressure Vessels are made for any specified operating conditions of temperature and pressure—with or without corrosion-resisting lining and in sizes subject only to the limitations of transport.

A. O. SMITH CORPORATION
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PIONEER MANUFACTURERS OF ELECTRIC-WELDED

PRESSURE VESSELS

SMITH HIGH YIELD CASING • SMITH LINE PIPE

(*Continued from Page 170*)

installed over the reinforced joints. The usual practice of curving lines upstream was followed. Through low lands the 18-in. lines were laid to a depth sufficient to provide a minimum cover of 36 in. and at points designated by the pipe line company rod-type anchors attached by ⅝-in. galvanized steel rods 5 ft. long to ⅜-in. steel bands over the top of the pipe were installed. Anchors are of the expansion type commonly employed by telephone and power line companies. An anchor was placed on each side of the pipe line with its tie rod at an angle of approximately 30 deg. with the vertical.

Crossing the Missouri River near Boonville, Missouri, about one mile upstream from Panhandle's original submerged crossing of six 10¾-in. lines, involves the laying of approximately 30,400 ft. of 12¾-in. O.D. (49.56 lb.) pipe in four lines. The War Department, in authorizing the river work, specified that lines be placed a minimum of 18 ft. below standard low water for a distance of 2000 ft. from the right bank, except that where the river bed is solid rock the pipe line be laid in a trench two ft. deep.

Following the completion of a header on each side of the stream and the laying of land lines, including the installation of the four lines through casing under the Missouri Pacific Railroad track on the south side of the river, and under a state highway near the north header, work is proceeding on the installation of the submerged lines. A rock-drilling boat, equipped for drilling 20 holes simultaneously, is being used to drill the rock near the south bank. Blasting and removal of rock is proceeding coincident with drilling. Dredging equipment is removing material preparatory to installing the river lines, which are being welded in 120-ft. lengths in a pipe yard.

Each 120-ft. pipe section after testing will be towed to final location and there joined in a continuous pipe line. After installing 1,800-lb. cast-iron river clamps over each weld, each line will be lowered from a barge to the trench in the river bed. A sealed 5-gal. can will be fastened to each third clamp by a length of steel cable before the pipe is lowered. The floating cans will mark the position of each line, providing the engineers with a means of checking the actual final location of the lines as the work progresses.

Williams Brothers Corporation, Tulsa, Oklahoma, has the contract for this crossing.

Compressor Horsepower Added

The new compressor station under construction near Tuscola, Illinois, is similar in design to the seven stations erected by Panhandle last year. Buildings are of structural-steel frame, clad with asbestos-cement, the main compressor building being 72 ft. wide and 84 ft. long, with basement under the entire building. A continuous 24-in. reinforced concrete mat provides a footing for the building and main unit foundations. Other buildings at the new station consist of an auxiliary building 36 ft. by 129 ft. 6 in., a garage and warehouse, 22 ft. by 50 ft., three well houses and derricks, and a residence for the station chief engineer. The property is enclosed by a close mesh industrial type fence 6 ft. high supported by 2-in. pipe posts set in concrete.

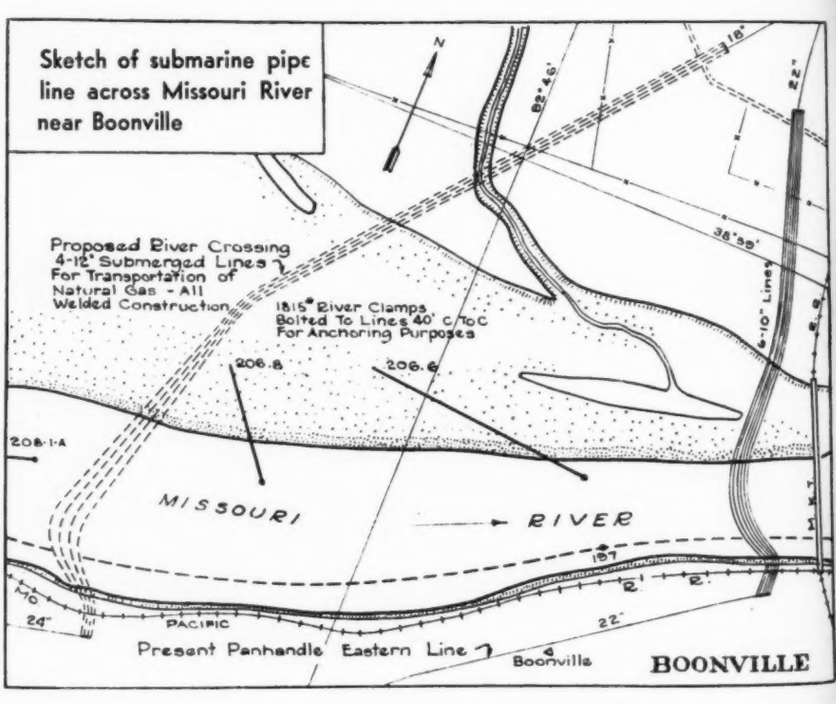
At Tuscola and at certain other stations 1300-hp. units are being installed. At the original stations, Liberal, Louisburg, and Glenarm, 1000-hp. units are being added.

Fifteen water wells completed last year will provide all water requirements for existing stations except at Houstonia and Centralia, where a third well is being added. Three gravel-wall-type wells have been completed this summer at Tuscola station.

The horsepower of stations prior to this year's additions, and that made available by the construction of one new station and additions to nine other stations is shown in the following tabulation:

Station	*Present Hp.*	*New Hp.*	*Total Hp.*
TEXAS			
Sneed	3,900	.....	3,900
KANSAS			
Liberal	7,000	3,000	10,000
Greensburg	3,900	3,900	7,800
Haven	3,900	3,900	7,800
Olpe	3,900	3,900	7,800
Louisburg	5,000	2,000	7,000
MISSOURI			
Houstonia	5,200	1,300	6,500
Centralia	3,900	2,600	6,500
ILLINOIS			
Pleasant Hill	2,600	3,900	6,500
Glenarm	4,000	1,000	5,000
Tuscola	.....	3,900	3,900
Totals	43,300	29,400	72,700

Additions to six stations and the construction of the new station near Tuscola, Illinois, are being constructed under a contract with Fluor Corporation, Ltd., of Los Angeles, California. The remaining three stations, in Kansas, are being expanded by Stearns-Roger Manufacturing Company, Denver, Colorado. This company also has a contract for the enlargement of the gasoline absorption and gas-dehydrating plant at Liberal station, originally constructed by this firm last year. The expansion of the gasoline plant will increase its processing capacity from 135,000,000 to 200,000,000 cu. ft. of gas daily.



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COMPANY
The New
ELLIOTT CUTTER HEAD
Elliott Wire Line Retractable Core Drill and Drilling Assembly Complete.
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Well on the Travis lease of Pure Oil Company, in Clay County, Illinois, which is being drilled with a steam rig to obtain comparative costs

Notes on Development Practice in Southern Illinois Basin Fields

Modern rotary rigs in use—weights carried on bit and methods of handling mud circulation similar to those employed in Mid-Continent

By J. C. ALBRIGHT

ALTHOUGH only a few wells have been completed as producers in the McClosky formation, enough prospecting has been done by the major oil companies that one may hazard a guess that this area eventually will play a great part in the production of oil east of the Mississippi River. Eastern Illinois at one time came very near being the largest oil-producing area in the United States, and only the discovery of oil at Glenn Pool, Oklahoma, prevented honors from being bestowed on Lawrence and Crawford counties. In these two counties, oil has been produced from the Bridgeport sand, the Buchanan, the Kirkwood, and the McClosky. Some of these sands carry corrosive fluids that corrode the casing, rods, tubing, and leads lines so consistently that only a short life is obtained on some types of equipment; however, the oil found in the McClosky in the old pools is sweet, and corrosion is not noticeable even after years of operation.

Near Bridgeport, many wells have been drilled in years past that penetrated all the producing formations above and including the McClosky, which lies at a depth of about 1800 feet. As years passed, some wells were drilled on the edge of consistent-producing folds, but prospecting never was carried many miles beyond the proven areas. The LaSalle Anticline, which bears north and south through eastern Illinois and western Indiana was thought by many producers to indicate the limits of folding favorable to oil accumulation; but during the past two years, an intensive exploration campaign by several companies has resulted in finding many other promising folds and structures.

The Pure Oil Company has been the most aggressive in exploration activities, taking the initiative about a year ago. Several locations were made in Wayne and Clay counties, with the result that a well was completed during May, 1937, that flowed 2642 bbl. daily, finding the McClosky at depths of from 2950 to 2960 feet. This particular well was on the Travis farm, SW-SW-NE¼ Sec. 33, Twp. 3N, R 8 E, Clay County, Illinois, and discov-

Hoisting crown block on well about ready to be spudded-in in the Clay City pool, Clay County, Illinois, on Pure Oil Company leases. Power will be supplied by gas engines mounted on skids

Record of Progress

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successfully gun-perforated Ellender No. 1 in the

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deepest producing oil well. . . The completion

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of deep-well operations which will vitally

affect the oil reserves of the entire world.

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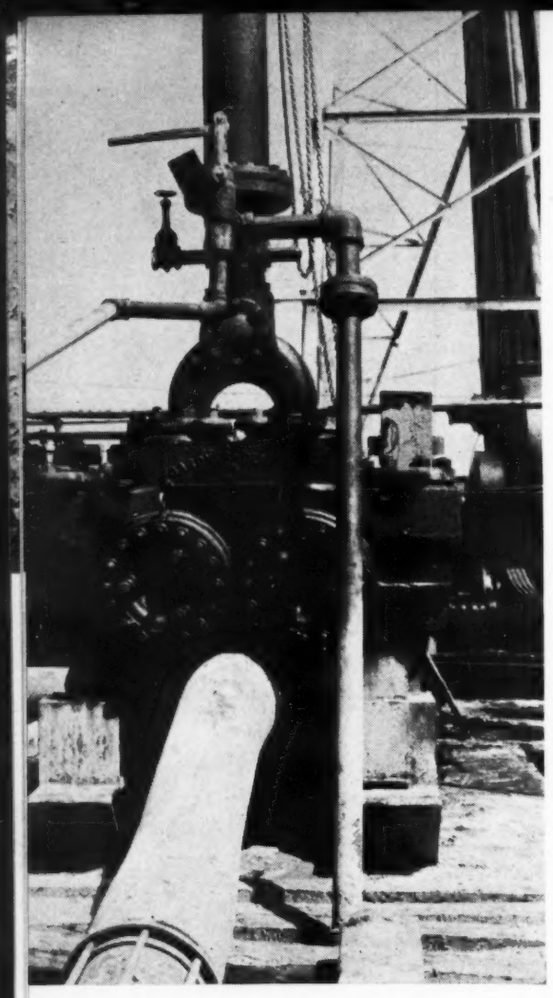
Tomorrow's Tools Today

Gun Perforator Service



Fluid end and suction hose of 7¾ x 20 slush pump used by Big West Drilling Company on Ohio Oil Company's well, Arbuthnot No. 1

Gravity	Flash	Pour	B.S. & W. percent	Vis./70	Vis./100	Sulphur percent	Water percent	Color	Charge
40.2	RT	b-30	Trace	42	38	0.16	Trace	Dk. Olive Gr.	2.00

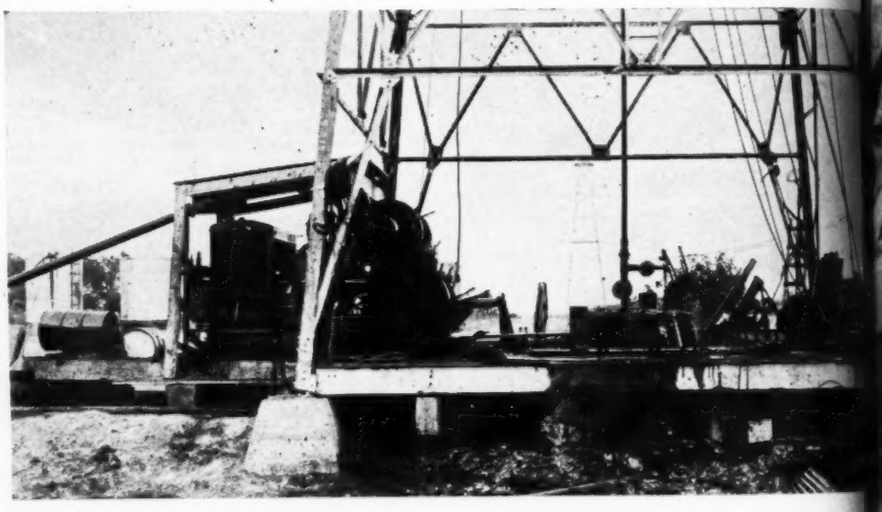
PRODUCTION AND YIELD

Product	Volume	Gravity	Viscosity	Sulphur	Octane No.	Pour	Flash	Fire
50-Octane gaso.	34.4	60.2			50			
420-E.P. gaso.	37.9	58.4		0.03	47			
Kero. distillate	8.0	40.5	450 T.V.	0.03	Anil. Pt.		162 PM	
Cracking stock	7.5	36.4		0.06	166° F.			
Wax Distillate	24.0	29.6	91 SU/100		205° F.	70	375	410
Hi-Vis. lube	3.4	23.3	307 SU/130			105	495	575
Bottoms	15.5	16.2	935 SU/210			(min.)		
Loss	3.7		(2160 Furol/122)					
Total	100.0							

V. G. C. Wax Distillate 0.838
V. G. C. Hi-Vis. Lube 0.848

though wells in the old fields of Lawrence and Crawford counties, producing from this formation have a consistently long pumping life. Pure drilled the first two wells to the McClosky, using cable tools, but since these wells, the Bunny Travis and Albert Travis, were drilled, cable tools have been "racked" and modern rotary rigs shipped in. On July 29, the Ohio Oil Company completed a well in the McClosky, in Clay county, about seven miles northeast of the discovery wells, on the Arbuthnot farm, which is the northwest ¼ of section 8, Twp. 3N, R 9E, but in Richland County, diagonally across the section from the village of Noble.

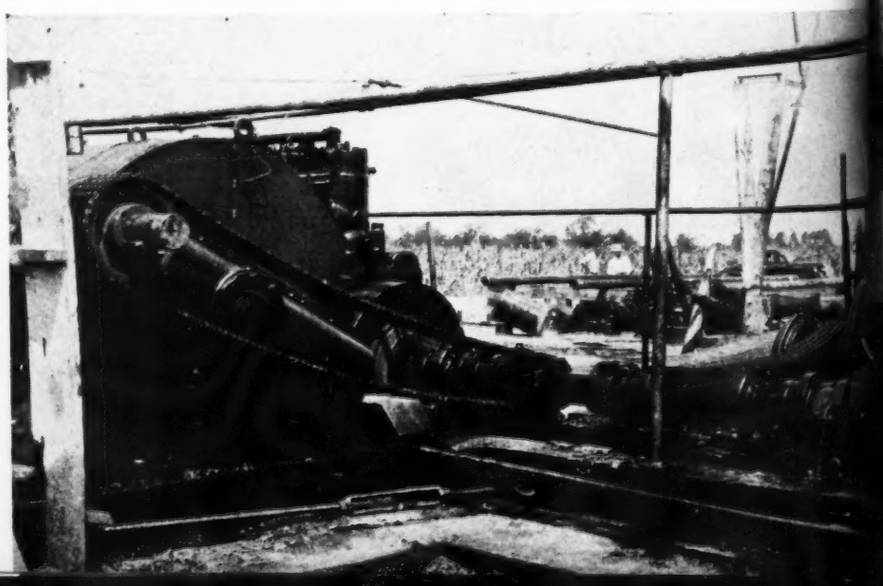
The well on this tract was drilled as a deep exploratory hole, with a 122-ft. steel derrick, and using two Fairbanks-Morse Diesels, connected by a Sheldon-Burden transmission. The rig was shipped from Fitts, in Pontotoc County, Oklahoma, where it previously had been used on wells of the Magnolia Petroleum Company by the Big West Drilling Company. This well was begun about July 1, and was completed without difficulty. It was cored consistently below 2800 ft. to determine the types of formation being penetrated. After the "pay" zone was penetrated, between 2948 ft. and 2963½ ft., a drill-stem test was made that was not conclusive; it only indicated a well of



Portable all-steel unit used by Pure Oil Company for swabbing well in Clay City field, Clay County, Illinois

ered what may prove to be one of largest oil pools opened in recent years. It is quite doubtful that production will be as continuous as that found in East Texas, due to the character of the formation, and the type of folding.

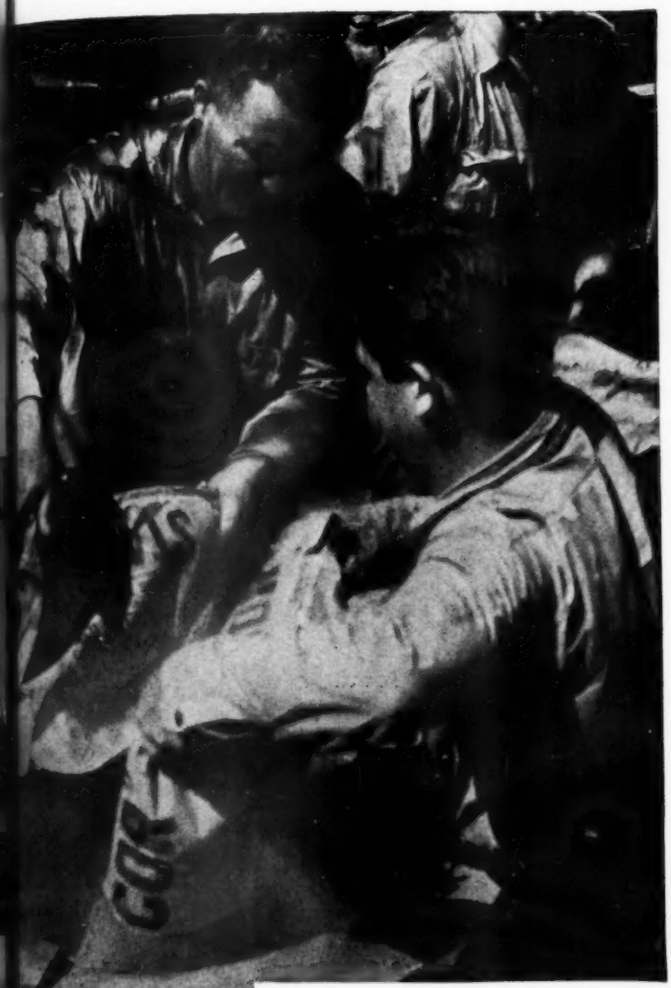
The McClosky, into which all wells in the "hot spot" area have been drilled, is found in the lower Mississippian, called the St. Genevieve, and is an oolitic limestone. Thus far, it has not proved to be startingly productive,



Chain drive between transmission and mud pump at Ohio Oil Company's well, Arbuthnot No. 1 in Richland County, Illinois

16.8-LB. MIX

TEMPERATURE 200°...'STARCOR' PUMPED LIKE DRILLING FLUID



TO land 8900 feet of 10" casing in a 12¼-inch hole takes lots of know-how. Engineers and crew certainly did their stuff. And so did the cement. Bottom hole temperature, 200 degrees—hot enough to make ordinary cement set before a hundred sacks could get around the casing. 'Starcor' made another tough job easy. 550 sacks . . . mixed 16.8 lbs. to the gallon . . . pumped into position in 1 hr., 22 min. . . . top pump-pressure only 1500 lbs.

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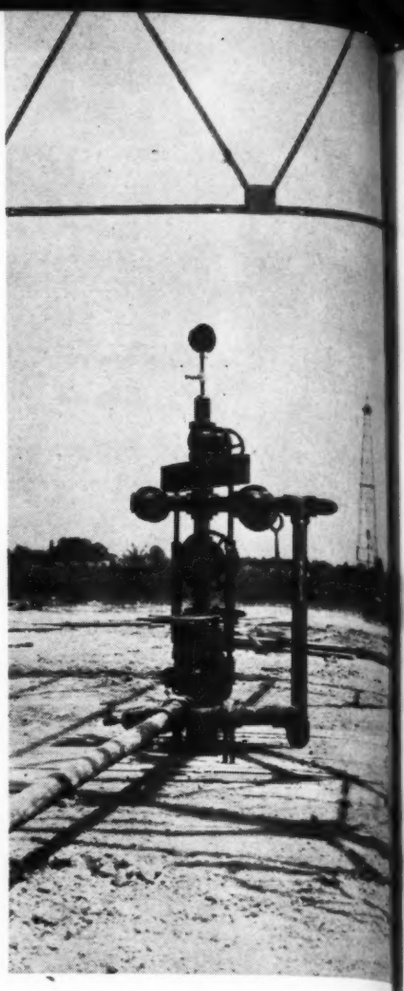
I. B. P.	107	112	424	511
5 percent	141	150	436	520
10 percent	162	168	438	526
20 percent	188	196	441	531
30 percent	211	219	444	536
40 percent	232	241	448	540
50 percent	253	264	452	546
60 percent	275	288	458	540
70 percent	295	316	463	556
80 percent	319	342	469	562
90 percent	350	370	478	573
95 percent	375	396	489	503
E. P.	390	415	503	587
Received, percent	97.8	97.8	98.1	97.0
Residue, percent	1.0	1.2	1.5	2.6
Loss	1.2	1.0	0.4	0.4

about 1500 bbl. daily. The 7-in. O.D. oil string was cemented the following Saturday night, and after the usual 72 hours allowed for the cement to set, it was drilled-in and flowed at the rate of 100 bbl. an hour for several hours.

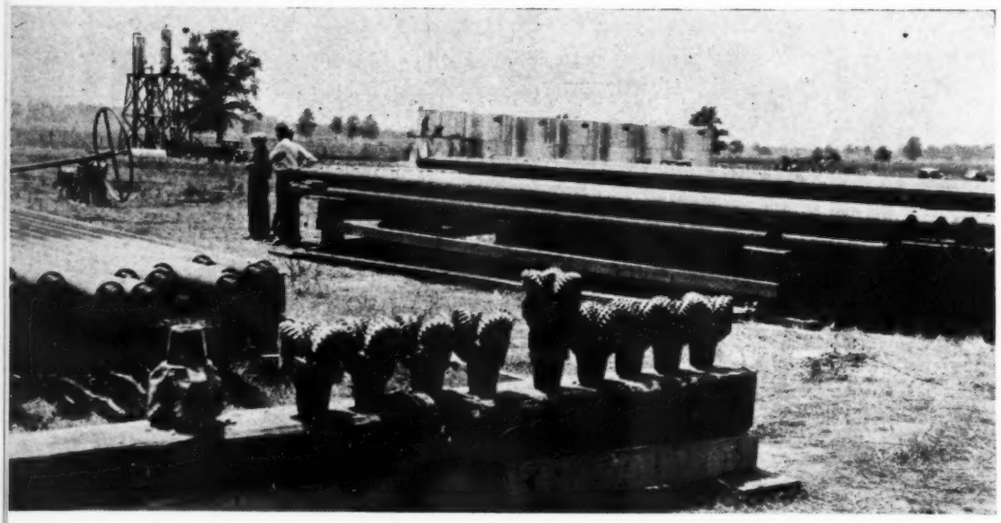
In this southern Illinois area, water is difficult to obtain at certain seasons of the year from surface ponds and creeks, and shallow wells do not provide a sufficient supply for an extensive program if many wells are being drilled near each other at one time. At the Ohio well a Schlumberger survey was made before casing was run in the hole and indicated that a fresh water stratum about 40 ft. thick at a depth between 300 and 350 ft. from the surface. If comparatively large volumes of water can be produced at this shallow depth, drilling can be carried on without interruption even during the dry seasons.

Drillers in this area have not yet had time to become entirely familiar with the different formations through which a hole must be drilled. Several drillers who have had experience in western Kansas state that weights on the bit and mud circulation similar to those used in the Mid-Continent can be employed in Illinois. From the driller's standpoint the formations all the way down are hard, pyrites being found at intervals approximately 2500 ft. below the surface, but easily drilled, so far as time is concerned, although somewhat hard on rock bits. The average hole that had been drilled to 2000 ft. or deeper early in August required a fresh bit for each 150 ft. of hole, more hole being drilled with some bits than others. Eighteen rock bits were used on the Ohio well, the wear on bearings and cones on each of which was found to be uniform.

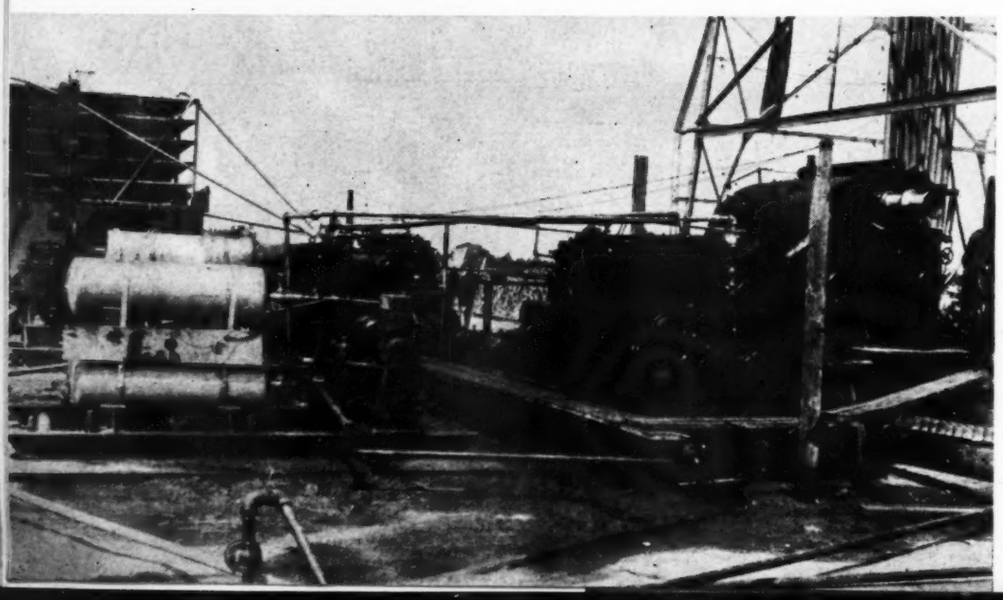
Weights carried on the bit average between six and eight points on the Martin-Decker indicator, and speeds



A. Travis No. 1, Pure Oil Company, in Clay County, Illinois, showing type of casinghead connections used on completed wells in that field



Rock bits used on a Pure Oil Company well, in Clay City field, Clay County, Illinois. The number of bits used is an index to the hardness of the formation



Diesel engine power hook-up on Ohio Oil Company's well No. 1 Arbuthnot

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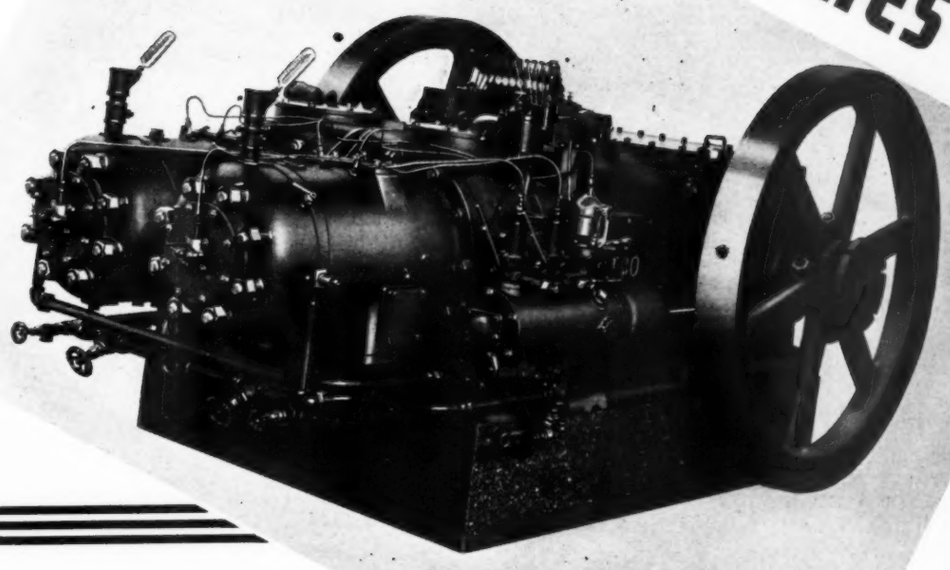

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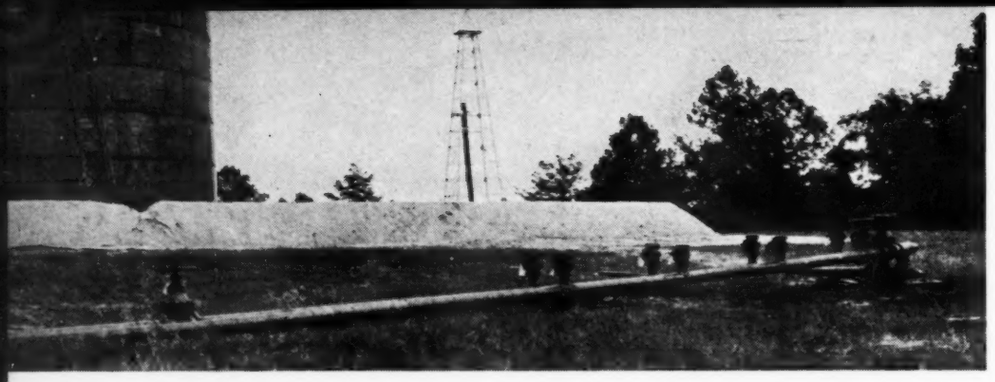
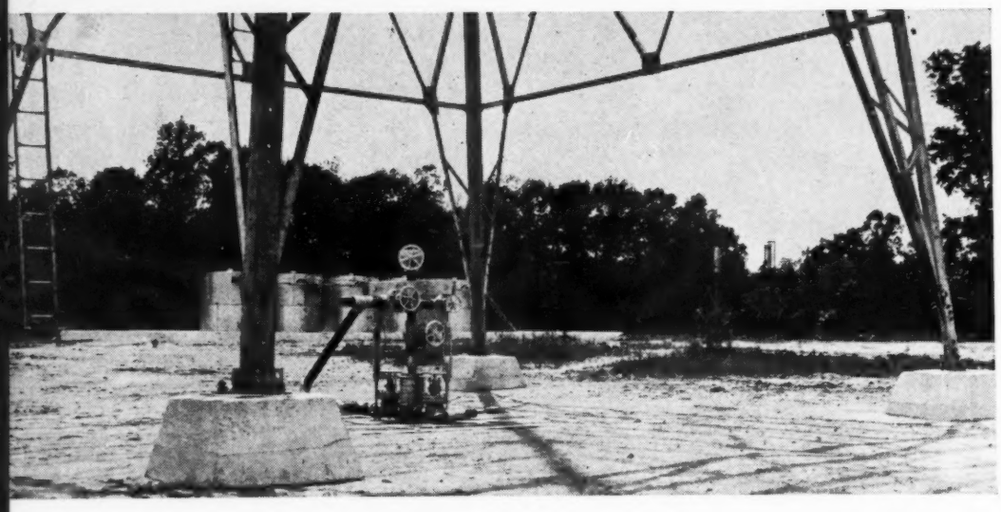


Preparations made by Pure Oil Company on Bunny Travis farm, Clay City field, for tank farm connections and pipe line station in field



Bunny Travis No. 1, Pure Oil Company, in Clay City Field, Illinois. Flow tank battery in background. Oil and gas separators mounted on elevated platforms in distance at right

averaging between 90 and 100 r.p.m. for the rotary table are being used by one of the leading drilling contractor's crews, who do not allow the hole to deviate from the perpendicular more than one and one-half to two degrees. If the hole appears to deviate perceptibly, the weight is kept off the bit and the rotary table speeded up until the hole automatically is straightened. Most of the contractors, and company tools for that matter, use gas engines or Diesel engines as a source of power. A few steam rigs are being operated in the area.

Shipment of oil has been confined to tank cars, the Pure Oil Company having a loading rack at Clay City, and the Ohio Oil Company one just west of Noble. Oil from the new field is being refined at Lawrenceville and at Heath, Ohio, and is said to have unusually good refining qualities. A sample of oil obtained from the Travis lease and tested in a laboratory on June 24th, gave the results shown in the accompanying tables.

When compared with the oil produced from the new Buckeye field in Michigan, it would appear that, when the volume of southern Illinois crude is sufficient, it may be utilized for straight-run and cracking operations in refineries in Ohio, to which it naturally will be transported. Buckeye crude has approximately the same gravity as that produced in southern Illinois, and contains about the same amount of 420-end point gasoline, but the difference in quality as a charging stock for the production of motor fuel is wide. Buckeye crude contains about twice the amount of sulphur that southern Illinois crude does, and the production of 420-end point gasoline will provide an octane value of only 16, as compared with 47 for the Southern Illinois product.

Completing wells in southern Illinois is not difficult, nor is drilling for that matter. Native muds seem to be adaptable for mixing with the circulating fluid without the addition in any great amount of colloids or weight materials. The absence of excessive pressures makes drilling a non-hazardous operation; approximately 1400 lb. is the highest bottom-hole pressures thus far encountered. A single master gate valve with a light blow-out preventer is all that is necessary. The drilling mud is carried at about 10.4 lb. per gal. and usually is conditioned with Baroco.

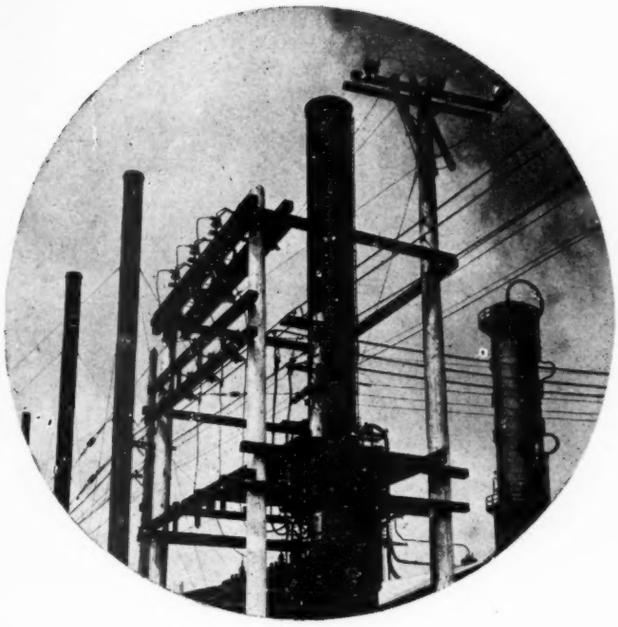
Production from the few wells completed about August 1st was obtained through 2½-in. tubing without the use of flow beans. A casing pressure averaging approximately 375 lb. on the Travis wells and a back pressure of about 50 lb. on the tubing controls, consisting simply of gate valves, permit a production of approximately 1300 bbl. daily per well on those that had been completed.

The extent to which this new production will extend over southern Illinois, southeastern Indiana, and possibly western Kentucky is problematical.

The formations dip toward the east from the Mississippi River on the west, and toward the west from the Cincinatti Arch east of the Wabash River. So far the only formation explored is the St. Genevieve in the lower Mississippian; the Devonian-Silurian, the Trenton, and the St. Peter all lie below the McClosky. Whether these deeper formations will produce oil in any quantity remains to be proven, and if the St. Peter is found productive, wells of the size discovered at Oklahoma City may result. This St. Peter sandstone is classified by some engineers as the equivalent of the Wilcox of Oklahoma, but this is a highly controversial point that must await further study before it can be settled. None of these formations lie so deep below the surface in southern Illinois that drilling will be particularly difficult to reach them, Prospecting at this time probably will be limited to uncovering productive areas where the McClosky is found.

Many of the major companies have holdings in this area running into the hundreds of thousands of acres, and one authority stated that approximately 7,000,000 acres in Illinois, Indiana, and western Kentucky already are under lease.

The area being prospected now includes most of southern Illinois, from Dupo, which is south of East St. Louis, to a point within several miles of Vincennes, Indiana, and from western Kentucky to as far north as Decatur, Illinois, which if at all productive, even from scattered folds, will prove to be a large field indeed. Many geophysical crews are employed in shooting new structures, and many others are resurveying the structures uncovered in the preliminary work so that definite prospecting and development programs may be mapped out.



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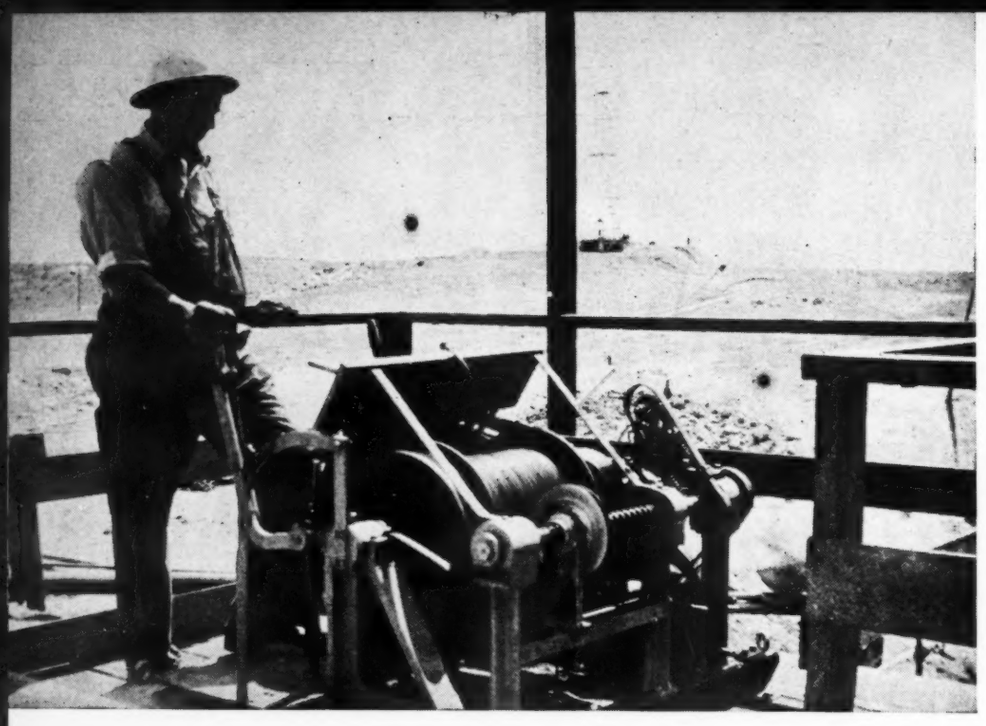

The speed with which a drift-recording instrument can be run into a well on wire line has been indicated by a hoist designed and built for demonstration purposes only by Technical Oil Tool Corp. Ltd., of Los Angeles. It has been used by one of the major companies in California and has a speed of about 4000 ft. per min. coming out of the hole. The equipment as shown here indicates the footage in, the footage out, the speed running. It is driven by a 20-hp. steam engine, has a self-spooler, clutch, throttle, and an internal-expanding brake that is fin-cooled

The Economy of Maintaining A Vertical Hole

Limiting the maximum allowable deviation and checking the inclination of hole at frequent intervals during drilling increases drilling speed and aids in improved well completion

By S. A. WALLACE

THE advantages of completing a well with a straight bore are obvious; but the fact that greater speed and considerable economy frequently may accompany controlled vertical drilling is not so widely recognized. The measurement of the inclination of the hole at frequent intervals is necessary but the important factor in controlled vertical drilling is that the data procured by drift indications provide a means for increasing the efficiency of the drilling operations. Instruments now widely used on a rig for measuring the weight on the bit, the table speed, the mud-pump pressure, and the torque on the drill pipe, all enable the driller to keep the hole very close to vertical through any formation, provided he knows what tendency there is for the bit to drift. The use of a drift-recording instrument run at proper intervals keeps him advised of that tendency and allows him to straighten up any deviation before the hole has drifted so far off vertical as to require a plugging-back job.

The disadvantages of a crooked hole, especially one with dog-legs, are probably most evident during the production period. Pumping costs in such a well are increased by the necessity for frequent rod and tubing repairs; and revenue reduced by production shut-down during repairs. By keeping a well straight, maintenance costs and loss of production are decreased materially. Economies and efficiency, however, can be increased during drilling too when a hole is kept straight and free from dog-legs; for less power is required to drill the well when the drill pipe rotates freely; wear on the drill pipe and joints is diminished, and fishing jobs are less likely to occur.

The main advantage in measuring the inclination of a well at frequent intervals during drilling, however, is in obtaining accurate information from which to formulate the technique and methods to be used. To get full

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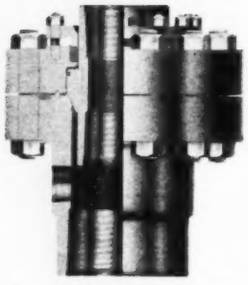
value from such measurements an instrument should be run that will give an immediate record of the inclination and provide the crew with a knowledge that will aid in keeping the well vertical. Misinformation may prove more harmful than no information, as a record of deviation greater than the actual drift of the hole may cause a plug-back job that is not only unnecessary but may be detrimental; or a record showing less inclination than is actually in the hole may cause an increased drift that will have to be straightened up with difficulty when a knowledge of the true inclination would have made possible a correction with little trouble. The instrument used should be simple, easily operated, accurate, and fast.

The real value of the drift-recording instrument depends, of course, on how the driller uses the information that it supplies. Yet it must provide accurate information at all times and permit the close reading of angles. On the other hand, the instrument must be used with care to insure accurate results. The importance of this is indicated clearly by the instructions sent out by one major company in California; such instructions conclude with: "The successful operation of the . . . (instrument) means a substantial saving to us. Every failure is more costly to us than the manufacturing of the instrument for the reason that our drilling speed is controlled by the information which we get from the instrument."

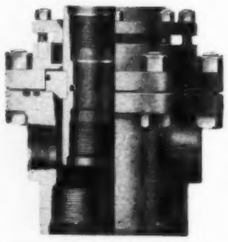
Various territories naturally require more frequent measurements of inclination during drilling than do others. The conditions should be analyzed by the personnel and how determinations concerning the intervals at which the instrument is to be run influenced by those conditions. There is probably no territory in which a hole can not be made crooked if wrong methods are employed. The practice followed under the most favorable conditions, and where experience has been gained in a number of wells, is to drill not more than 150 ft. without a record. In contrast to this are territories and conditions that have made it advisable to take readings as often as every ten to 20 feet. If the importance of the readings is realized it will not be difficult to determine the interval at which the instrument should be run.

In controlled-vertical drilling the maximum deviation allowed varies to a considerable extent with different companies. At the present time, however, the limit is less frequently set up to five degrees. Some operators feel that a three-degree limit results in faster drilling than does a higher allowable. The three-degree maximum seems to avoid plug-backs and other disadvantages and it is believed that it is more difficult to hold to four or five degrees than it is to hold to three. With rare exceptions in formation conditions it has been found that a well held to three degrees will "bottom" close to the vertical and in Kettleman Hills such wells are completed within 100 ft. of the point directly below the mouth of the well. When the hole is not held to close limitations there will be large changes in direction.

Methods used in controlled-vertical drilling must involve consideration of



Type "EH" 10,000-lb. test
(Forged Steel)



Type "M" 3,000-lb. test
(Cast Steel)

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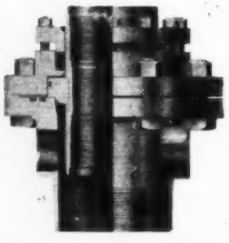
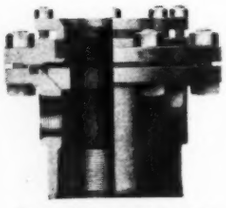
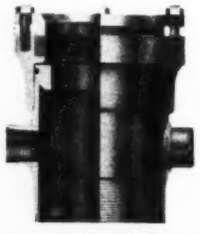


Type "H" 6,000-lb. test
(Forged Steel)



Type "L" 1,500-lb. test
(Cast Steel)



Type "C" 1,000-lb. test
(Semi-Steel)

RECTOR

the weight carried on the bit, the rotating speed, and pump pressures. It is by utilizing these that the hole is kept straight or is brought back to vertical if it should drift. The formations being drilled naturally affect these factors and it is seldom that a relatively deep well can be drilled through a variety of strata with the same weight, table speed, and mud pressure. The fastest drilling can be done by a proper coördination of weight, speed, and pressure under the conditions encountered.

In developing the method best adaptable for drilling straight hole it must be remembered that the drill pipe should be kept in tension. The heavy drill collars now being used provide for this and there is every possibility that further development in the design of drill collars will result in increased efficiency in controlled-vertical drilling technique. Greater table speeds probably will be used, although some companies already are running the kelly at 450 r.p.m. As table speeds increase, the weight naturally must be decreased. Wear and tear on equipment may necessitate further improvements in machinery design, although the use of a separate engine for driving the rotary table direct has done much to make high rotating speeds practical.

Too little attention probably is being paid to keeping the upper part of the hole as close to vertical as possible; yet all drilling has to be done through the surface string after it has been set and any inclination of this string, especially at its bottom, will have an influence on the deeper drilling to follow. When it is considered that the string of drill pipe is virtually a plumb bob with its theoretical point of suspension at the crown block, it can be realized that any material drift in the hole before the surface pipe is set will transfer the point of suspension to the shoe of a slanted pipe and that the drill pipe must wobble over that point if the hole is then straightened up. One company insists that the deviation of the surface string shall not exceed three-fourths of a degree and prefers a maximum inclination of only one-half a degree or less even though the allowable for the well is three degrees.

Any string of casing of course, will run into a straight hole with greater ease and safety than it will into a crooked hole, especially one with doglegs. The cementing job also will be more likely to be successful when the hole is straight, as contact of the pipe with the wall will always introduce the hazard of channeling. Such a condition is particularly dangerous when the inclination is at or just above the casing shoe.

The reasons for drilling straight holes are too well recognized to warrant any full discussion of them here. A vertical well is so desirable that much time and money frequently is spent in straightening up one that has drifted too far. It is far better and cheaper to keep the well straight, however, than it is to bring it back to vertical; and the proper running of instruments to indicate deviation as it begins, together with employing a technique that will give controlled vertical drilling, certainly can be considered worth while.

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"pay sand"

Fig. 747 Fig. 718

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Proper Lead-Ins For Field Station Wiring

By ELTON STERRETT

IN the hurry attendant on the tying-in of wells and other details the superintendent delegated some of the responsibility to others of the force.

As the pumps were to be motor-driven, with purchased electric power, it was necessary to provide means for bringing the current from the light company's transformer bank to the switches and other control within the stations.

Among the specifications were figures calling for a 2½-in. conduit from the transformer bank to the station control panel, but in some manner this large conduit went astray and, to hurry things along still more, the foreman obtained three ¾-in. conduits and laid them side by side, burying them under the concrete walks of the yard and grouting them firmly into the floor and walls of the building.

When it came time to string the power leads they were threaded, singly, through the ¾-in. conduits, and tied in to the panel. The electrician from the power company came along, made the tie-in to the transformer leads—and said never a word about the station wiring although he came right up against the condition at each of the three stations. As crude was available, first one and then another of the field stations was put to work—with almost immediate and recurrent breakdowns. Although the conductor laid within the conduits was of the best grade procurable, it seemed to lose its insulation rapidly, an odor of hot rubber being apparent at the conduit ends almost at once after throwing the switch.

Harassed by other worries of starting oil movement, the superintendent did not catch the error in wiring—the violation of one of the first principles of electric wiring—until a third set of lead-in cables had been found burned in two, well within the sweep of the conduits, and temporary lines had been strung above ground to give the motors current and to prove without a doubt that the trouble lay somewhere within the conduits.

Experimenting to check his theory, a short section of conduit was threaded over one of these exposed leads, and within a few minutes it became too hot to be borne by the bare palm. The principle that one a-c. lead can not be carried within an iron pipe was again demonstrated. As it was impossible to run three cables of the electrical capacity required through any one of the ¾-in. conduits, it appeared that the overhead wiring would become permanent, until the expedient of running a second wire through each conduit alongside the current-carrying lead, and connecting the three shielding wires at each end, was tried.

The shielding wires acted in effect as secondary leads of a transformer and carried away to be equalized through their interconnected ends the energy that formerly was being converted into heat and concentrated in the pipe walls to the detriment of the insulation on the cables.

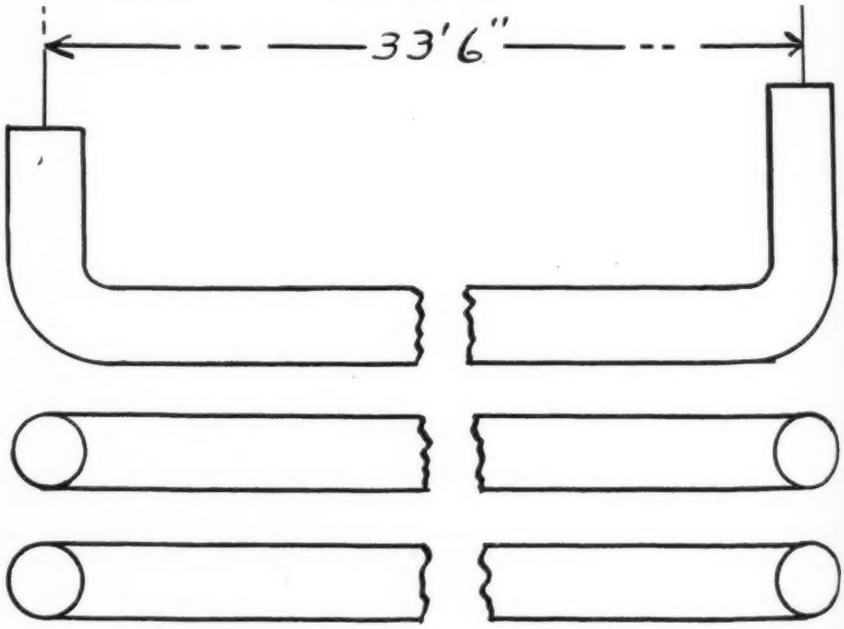
The wires in the conduits were found to collect moisture under varying atmospheric conditions, even though the open ends were shielded against rain and even loosely plugged with electricians' tape in an endeavor to control the entrance of moisture-laden air. On one occasion nearly half a gallon of water was blown from one conduit, after which it was determined to seal the wires within their respective tubes, using a 150-penetration asphalt as additional insulant and seal. Forced into the high, outside end of the conduit in a molten condition, the asphalt was forced into the tube until it rose into the upturned station end, and there plugged while it built up to the inlet.

The problem of removing the earlier conductors, when the installation of another pump and motor made larger leads imperative, was solved by a controlled use of the very principle that earlier had given trouble. By using two temporary above-ground leads and one of the buried lines, with the shielding grid opened, the temperature within the one conduit in use was raised until the asphalt was softened sufficiently to permit the wire to be pulled.

As the larger conductor had been brazed to the old lead, it was drawn through the conduit as the old wire was withdrawn, maintenance of current flow through the lead being changed, providing against the possibility of the asphalt cooling sufficiently to prevent pulling in of the new lead.

Notwithstanding the success of the shielding plan, which was not 100 percent effective, but which did cut down the heating below the point where it affected insulation, the installation of conduit large enough to carry *all three* leads was watched carefully during the construction of field stations subsequent to the three on which the foreman had demonstrated his unfamiliarity with the behavior of one a-c. lead in an iron pipe.

Fig. 1. Conduits as laid, two in plan and one in elevation to show wiring and insulation



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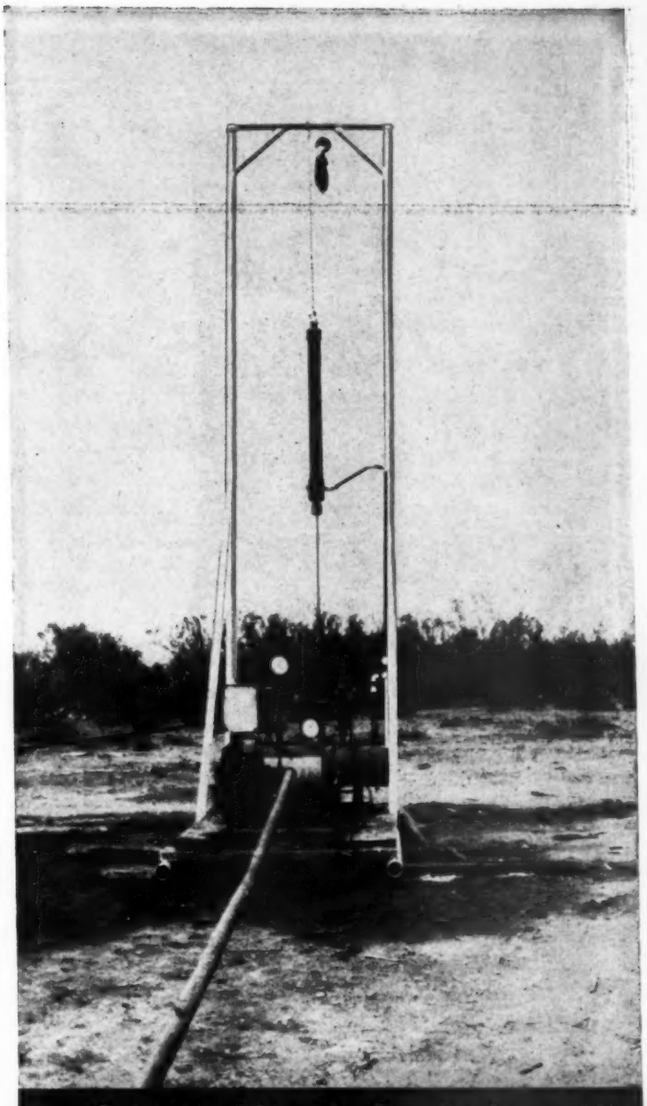

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LAUGH WITH BARNEY

Edited by BARNEY HORRIGAN

"Did you ever sell brushes?"

"No, why?"

"Well, you better get one quick and start selling. That's my husband at the front door."

* * *

If

Frowsy Gent: This liquor won't cause any damage to my eyes, will it?

Husky Bartender: Not if you've got the money to pay for it!

* * *

"I suppose," said the lady to the tram conductor, "if I pay the fare for my dog he will be treated the same as the other passengers and be allowed to occupy a seat."

"Of course, madam," the conductor replied politely, "he will be treated the same as other passengers and can occupy a seat, provided he does not put his feet on it."

* * *

A rather inebriated individual entered the office of the local Registrar of Vital Statistics, and said, "Gentlemen, (hic) I wanna regshter the birth of (hic) twins.

The Registrar replied: "Why do you say gentlemen? I am the only one here."

"Only one of you?" asked the new father, astonished. "Guess I'd better go home (hic) and make sure."

* * *

Aw, Heck

Boy: But, officer, you can't arrest me. I come from one of the best families in North Carolina.

Cop: That's all right, buddy. I'm not arresting you for breeding purposes.

* * *

"Who commands in your house?"

"We share the management. My wife bosses the servants and the children. I attend to the goldfish."

* * *

"What's the difference between a grass widow and a sod widow?"

"Just a lot of dirt."

* * *

Captain, are you sure this is a good boat?

Well, madam, it's her maiden voyage.

"When I was in Atlantic City, I stopped at the Ambassador Hotel."

"Why, the Ambassador Hotel is in Philadelphia."

"What? No wonder it took me so long to walk to the beach!"

* * *

"Certainly I respect your legal advice Mr. Bell, but what good is alimony on a cold night?"

* * *

Colored Lad: What did yo' all work at before you came to Detroit?"

Schoolmate: Finest job in town, Mose."

Colored Lad: Yeah? What wuz ut?

Schoolmate: Driving a garbage wagon. $18 a week and all I could eat.

* * *

Come-to-grief-airman: I was trying to make a record.

Farmer: Well you're the first man in these parts who climbed down a tree without having climbed up it first, so you made it."

* * *

"You're the nicest boy I ever kissed."

"Tell that to the Marines."

"I have. Dozens of 'em."

* * *

"And you are secretly married to her?"

"No, she knows it."

* * *

"I never kissed a girl before in my life," said the young man as he removed his cigar from his vest pocket and took her in his arms.

* * *

He is so tough he can drink sulphuric acid and the only results are holes in his handkerchief when he blows his nose.

* * *

And then there is the college boy who got extremely tight drinking punch at the fraternity dance before he was told there wasn't any liquor in it.

* * *

Worked Over

"I'm a self-made man."

"You're lucky. I'm the revised work of a wife and three daughters."

"What is home without a mother?" asked the good looking young man.

"Well," replied the sweet young thing, "I am tonight."

* * *

Co-ed (just home for a vacation): Mother, an old farmer came out to the lake where I was swimming in the nude.

Mother: I suppose you had to stay in until he left?"

Co-ed: I did not. I got out the minute he jumped in."

* * *

"What is more pleasant than a cold bath before breakfast?" asks a writer.

Answer: "No cold bath before breakfast."

* * *

"How's your new girl?"

"Not so good."

"You always were lucky."

* * *

I knew a girl named Passion,
I asked her for a date;
I took her out to dinner,
And gosh! How Passionate.

* * *

Traveller: Can I get anything to eat in this dump?

Negro Waiter: Yas, sah, you kin.

Traveller: Such as what?

Negro Waiter: Such as it is, sah.

* * *

Giddap!

Husband: I locked the car up before we left it, and now, confound it, I've lost the key."

His Wife (helpfully): Never mind, John, dear, it's a swell night, so let's ride home in the rumble seat.

* * *

Greengrocer: Any horseradish, madam?

Young Bride: No, thank you. We have a car.

* * *

Medical Man: Your husband must have absolute quiet. Here is a sleeping draught.

Patient's Wife: And when do I give it to him?

Medical Man: You don't give it to him—you take it yourself.

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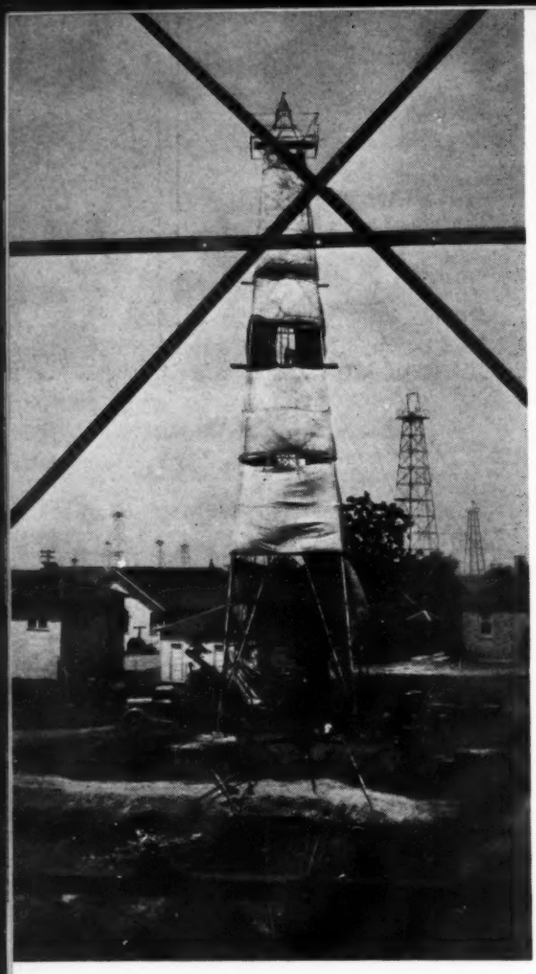


Nearby homes are protected during well-servicing operations when the the derrick dons its "Mother Hubbard" before the job is begun

Neighborhood Protection During Well-Servicing

By CHAS. C. LYNDE

WELLS in the East Texas field are serviced for the removal of paraffin deposits much more frequently under proration than would be the case were open or flush flow of the wells permitted. These deposits accumulate quickly on the wall of the tubing and interfere with production.

Many of the wells, the sucker rods and tubing of which must be pulled at regular intervals in order to maintain their daily allowable, are situated in the business or residential sections of either Kilgore or Gladewater, often being so close to a building that a single step will bridge the gap between dwelling and bottom girt of the derrick. This crowded condition makes the pulling and racking of 3000 ft. of dripping sucker rods and tubing a job in the performance of which neighboring grounds, buildings, and highways quite liable to frequent sprays of oil and paraffin, whipped from the 80-ft. sections of tubing and rods by every wind that blows.

Because of the height of the derrick and the material temporarily stored within it during the servicing operation, there is no way open to the householder for protecting himself and his goods against the unsightly spattering of oil that must follow or accompany a pulling job.

One producer, at least, has solved the problem of protection by shrouding the derrick in a canvas enclosure before servicing is begun. By curtailing the shrouding on the open side of the derrick, and leaving off one panel at the height of the tubing-board to give light and ventilation to the men working there, the wind is kept from the rods and tubing, and what little spray is whipped free by the air admitted for ventilation is readily intercepted by the canvas.

If the opening at the height of the tubing-board be arranged to permit quick change should the prevailing wind veer through 90 deg. and the opening kept thus always *toward* the wind, it will prevent spray reaching the surrounding buildings. The direct draft of fresh air blowing on the man on the derrick will protect him from gas that otherwise might tend to accumulate within the canvas enclosure and by its concentration create an asphyxiation hazard.

Instead of being considerably hotter to work on than one open on all four sides to the wind, a canvas-enclosed derrick, by cutting off direct rays of the sun, actually provides cooler working conditions on the well and consequently accelerates the job of servicing.

An 8-oz. duck, rope-bound and with marginal grommets for quickly lacing into place, has been found light enough to place quickly, yet amply heavy to protect the neighborhood from unwelcome showers of oil and paraffin, even in fairly high winds.

METHOD OF IMPREGNATING CORES FOR STUDY

DR. A. W. Waldo, formerly at Pennsylvania State College, and Dr. S. T. Yuster, School of Mineral Industries, Pennsylvania State College, have developed a method of introducing a colored plastic material into the pore space of porous substances[1].

After the selected specimens have been cut to the desired size and shape they are placed in porcelain crucibles and covered with small lumps of Canada balsam to which has been added a bright, oil-soluble dye. The crucibles are then placed in a pressure-tight cylinder equipped with vacuum and pressure connections and an electric heating unit. Application of vacuum draws the air out of the pore spaces of the samples. The balsam is then melted by connecting the heating unit, and is forced into the evacuated pores by application of pressure. The method is quite rapid, considering the number of samples that can be treated at one time, and the equipment required is available in any well-equipped laboratory.

After treatment the samples may be sectioned and mounted on slides for microscopic examination and study. The pore spaces are readily distinguishable from the mineral grains because of the color added to the balsam filling the pore spaces. The size of the pores may be determined by direct measurement, and their shape and arrangement observed in specimens not distorted during the sectioning process.

The chief technical difficulty encountered in preparation of samples by this method is the proper handling of the balsam to obtain a hard but not brittle binder. The tests used by geologists and others in preparing balsam for cementing thin sections to glass slides have been found satisfactory and not too difficult for the average laboratory assistant to perform.

Study of cores impregnated by this method should yield much new information of value to commercial core-testing laboratories and to educational institution and company research workers.

[1]Methods of Impregnating Porous Materials to Facilitate Pore Studies, Bull. Am. Assn. Pet. Geol., Vol. 21, pp. 259-267, 1 fig. 1937.

Running Tour
WITH MEN IN THE INDUSTRY

F. G. JAMISON, formerly manager of the Wichita, Kansas, offices of the Continental Oil Company, has been transferred to Denver, Colorado.

RALPH WILLS, formerly general superintendent for the Rocky Mountain Company, has been employed as superintendent of operations for the Anglo-Canadian Development Company, Ltd., of Calgary, Alberta.

J. E. F. DeKOK, general manager of the Royal Dutch Company, will leave The Hague about the end of September for a visit in South Africa. He will travel in his own plane to Cairo, and from there will follow the Imperial Airways' route.

FREDERICK G. CLAPP, vice-president of Amiranian Oil Company and Inland Exploration Company, subsidiaries of Seaboard Oil Company of Delaware, left New York recently to take charge of the companies' explorations in Iran and Afghanistan.

JOHN A. BROWN, president and chairman of the executive committee of Socony-Vacuum Oil Company, Inc., accompanied by Mrs. Brown, has returned from a combination business and pleasure trip to Europe. They spent several weeks in England, Austria, Germany, and Switzerland.

R. M. ANDERSON, chief engineer at Magnolia's Connelle Station for the last ten years, has been transferred to Midland, Texas. He is succeeded at Connelle Station by **J. G. HOWARD,** formerly at Iatan Station.

N. M. HUTCHINSON, Oil Hill, Kansas, production engineer for the Kansas division, has been transferred by the Empire companies to Bartlesville, and **R. C. HAUBER,** production engineer at Bartlesville, has been sent to Oil Hill.

W. R. FOSTER, professor of geology at the University of West Virginia, has established headquarters in Evanston and is making a study of the Spring Valley area.

SAMUEL S. ALLENDER is en route to Abadan, on the north end of the Persian Gulf, to supervise the erection of a polymerization plant for the Universal Oil Products Company of Chicago. Allender formerly was superintendent of the Shamrock Oil and Gas Corporation's Sunray, Texas, gasoline plant.

W. N. DAVIS has resigned his position as vice-president of the Phillips Petroleum Company, but has not announced his future plans. He has been active in affairs of the American Petroleum Institute and other groups.

E. J. McKEE, formerly connected with Anderson-Prichard Oil Corporation, Oklahoma City, Oklahoma, is now production superintendent with Barnett Petroleum Corporation, Dallas, Texas.

P. S. (PETE) HAURY, consulting petroleum engineer and geologist, has opened an office at 609 Wilson Building, Dallas, Texas. He had served the First National Bank in Dallas as petroleum engineer since his recent return from Korea, where he was engaged in mining engineering for several years. Prior to his work in Korea he was petroleum engineer for Simms Petroleum Corporation, Dallas, Texas.

C. S. PENFIELD, formerly drilling superintendent for Sarawak Oilfields, Ltd., at Miri, has returned to the United States and is employed as drilling superintendent for the Shell Oil Company at Signal Hill, California.

MARTIN MEARS, who has been serving as superintendent of drilling and superintendent of the Ventura and Santa Maria divisions of the Associated Division of the Tide Water Associated Oil Company, has been placed in charge of drilling operations for the Associated Division. **F. W. HERTEL,** formerly assistant superintendent at Ventura, has been made superintendent of the Santa Maria and Ventura divisions.

ACE CLINGMAN has been named drilling supervisor for Kingwood Oil Company, and will establish headquarters in Flora, Illinois. He was formerly connected with Gillespie & Moore, drilling contractors, in the Illinois coal basin.

FRANK C. ROPER and **JOHN D. TODD,** independent geologists, have transferred their offices from Lafayette, Louisiana, to 908 Sterling Building, Houston, Texas.

FRANK WILLIBRAND, formerly superintendent at Oklahoma City, Oklahoma, has been transferred by the Phillips Petroleum Company to Ada, Oklahoma, and is in charge of the company's wildcat tests in eastern Oklahoma.

C. V. BOB has resigned his position with the Buckingham Oil Company and Eleanor Oil Company of Corpus Christi, Texas. **F. R. PETERSON** has been elected to succeed him. **D. P. NEILL,** formerly with Danray Oil Company, will serve as production superintendent for both companies.

GILBERT W. NOBLE, who has been with the Standard Oil Company of New Jersey, recently was appointed assistant professor of petroleum engineering at the Missouri School of Mines in Rolla, Missouri.

W. R. CHEDSEY, who has been chairman of the mining department of Pennsylvania State College, recently was made director of the Missouri School of Mines petroleum engineering department to fill the vacancy created by the resignation of **DR. STEPHENSON.**

ROBERT HARCUS, Mrs. Harcus, and their daughter are taking a vacation in California. Harcus has served as field superintendent for Assam Oil Company at Digboi in Upper Assam for several years, but will be assigned to service with the Burmah Oil Company, at Yenangyoung, Upper Burmah.

MACHINERY and EQUIPMENT

Fully-Enclosed National Band Wheel Power

IN the design of the National No. 14-D Pumping Power, recently announced by The National Supply Company, of Toledo, Ohio, full advantage has been taken of experience with both band-wheel and geared powers.

One important result is a completely-enclosed dust-proof construction. Every moving joint is protected by a felt oil seal operating against machined surfaces. Combined with National's patented circulating flood-oiling system, a standard of lubrication efficiency equalling geared powers is attained, the manufacturers state.

The distinct advantage of the single-crank design on geared powers has prompted the use of the single eccentric construction resulting in certain very definite benefits, it is stated. The problem of good balance on the eccentric strap has been simplified and the loading of the spindle reduced. Furthermore, it has been possible to concentrate the load much closer to the base, it is pointed out.

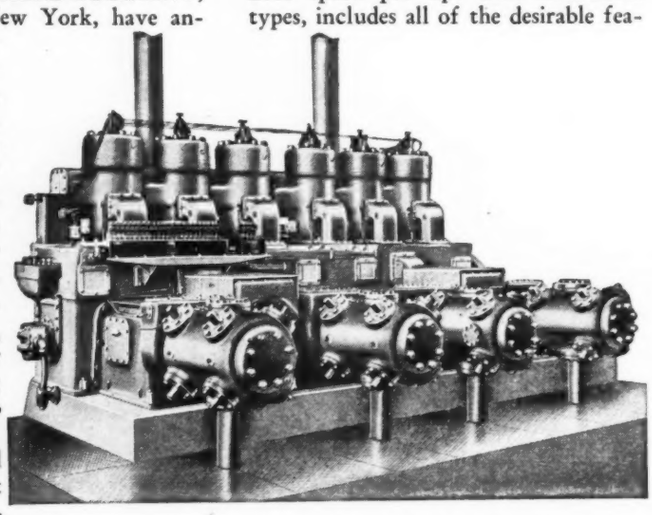
The eccentric and hub assembly is carried on two large-capacity Timken bearings. The eccentric strap has unusual bearing width, and is made with a pin-hole circle for connections of a type new to band-wheel powers. There is no wear on the eccentric strap from the connections. This comes entirely on a bronze bushing of generous size in the connection itself, which is provided with an unfailing film of lubricant from a covered pocket.

The band wheel itself is a new development. It is entirely of welded construction with no projecting bolts or rivets on the belt face. Rim sections are rolled and are permanently diametrically correct. The entire wheel is assembled on a large steel driving plate in the form of a circular disc that is a part of a rigid assembly of rotating parts along with the hub and eccentric. The wheel is easily aligned and quickly erected.

The rated capacity of the National 14-D Power is 80 hp. at 20 s.p.m. The diameter of the band wheel is 24 ft., with a face of 24 inches. The regular eccentric stroke is 30 in. with optional strokes of 24 and 36 inches.

Clark Bros. Announce 6-Cylinder Size of Super-2-Angle Compressor

CLARK BROTHERS COMPANY, of Olean, New York, have announced that they are now in production on the big 6-cylinder, 600-hp. size of their "Super-2-Angle" compressor introduced a little more than a year ago. This compressor is now offered in 2-, 3-, 4-, and 6-cylinder sizes, ranging from 200 hp. to 600 horsepower.



It is claimed that this compact right-angle compressor, while occupying much less floor space per hp. than horizontal types, includes all of the desirable features of the horizontal compressor. The Clark "Super-2-Cycle" fuel injection system used for many years on Clark horizontal compressors is a feature of the new angle machine, as well as the special Clark scavenging method which provides 25 percent excess air for the power cylinders.

The manufacturer announces that the new 6-cylinder unit is to be used on the following jobs: Godfrey L. Cabot and Company, on their New York State line; Memphis Natural Gas Company, on their Louisiana to Memphis line; Carnegie Natural Gas Company on their Pennsylvania line; Mississippi River Fuel Company on their Louisiana to St. Louis line; Washington Gas Light Company on their District of Columbia Booster Station; Colorado Interstate Natural Gasoline Company.

Oil Pump Ball Valves Improved

MATERIALS of construction play an important part in the service given by ball valves for preventing the reverse flow of oil in pumping wells. A recent development is the use of wear- and corrosion-resistant non-ferrous al-

Hastelloy D balls and Haynes Stellited seats for working barrel valves handling crude oil

loys for these parts. Valve balls are ground from castings of Hastelloy D, an acid-resistant nickel-silicon-copper-aluminum alloy, and the seat rings are hard-faced with Haynes Stellite, the wear-resistant alloy of cobalt, chromium, and tungsten.

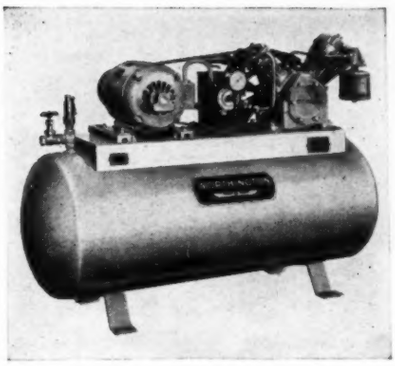
The manufacturers state these alloy valve balls and hard-faced seats have proved especially suitable for handling high sulphur crudes, which are corrosive, and, in the case of sand-carrying oils, abrasive as well. A considerable saving is effected through the use of valves having these alloy parts because they remain in service for long periods of time and thus materially reduce the expense and loss of time occasioned by replacement, the makers claim.

Improved Compressor Units for General Service

AN improved line of tank-mounted compressor units for general industrial service has been developed by Worthington Pump and Machinery Corporation, Harrison, New Jersey. Single-stage units are available with vertical compressors. The motor sizes range from one-quarter to five hp., with displacements from 1.43 to 67 cu. ft. per minute at a maximum pressure of 250 lb. per sq. inch.

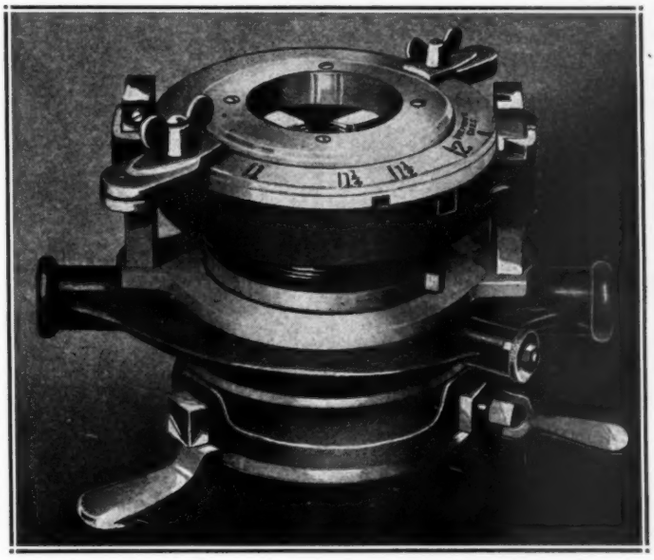
Two-stage units are available with angle-type compressors. The motor sizes range from three-quarters to ten hp., with displacements from 3.9 to 45 cu. ft. per minute at a maximum pressure of 250 lb. per sq. inch.

A pressure switch, with a valve for



unloading the compressor when starting or stopping, is supplied on all models. All units are equipped with Worthington feather valves. The crankshaft is carefully balanced to insure smooth operation. Full-floating wrist pins provide durability and quietness. The honed cylinder walls reduce friction and increase the life of the piston rings, the makers state. Most models are available with either vertical or horizontal tanks (air receivers).

Simplicity of design, compactness, and attractive appearance have been especially considered in these units.



It's dependable . . that's the answer!

The old reliable BEAVER "26" has outlived dozens of cheaper, lighter and fancier-looking pipe threaders because it has the ability to withstand severe abuse and remain dependable.

It may be a broken steam line on board a typhoon-battling freighter off the coast of China—a compressed air line deep down in a South African gold mine—a spouting oil gusher in Texas—or just a midnight breakdown in any local industrial plant. The BEAVER "26" takes them all in stride.

The BEAVER "26" has remained popular for nearly 30 years because it is fully dependable in any emergency. In the long run that is what determines the success or failure of 'most everything.

BEAVER PIPE TOOLS

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Super STRENGTH AND FLEXIBILITY

These two factors are vitally essential in rotary hose for modern deep well drilling operations: (1) STRENGTH . . . sufficient to withstand the high pressures of a wild well, or any emergencies that may be encountered; and (2) FLEXIBILITY . . . such as that obtained by our exclusive Grizzly construction.

In addition to its super flexibility, Grizzly embodies 50% greater strength than any other rotary hose manufactured. Be safe . . . insure maximum economy . . . specify Grizzly. There's a Grizzly hose for all pressure ranges.

• GRIZZLY POWERFLEX for 10,000 lb. pressures
• GRIZZLY CUB RED LINE for 7,500 lb. pressures
• GRIZZLY CUB for 5,000 lb. pressures •

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GRIZZLY ROTARY HOSE

Two-Stage Built-Together Pump

A TWO-STAGE built-together pump (pump and motor built together) has been developed by Fairbanks, Morse & Company to operate against heads up to 500 ft.—higher than could be handled by a single-stage unit. In many applications it offers a less expensive alternative for multi-stage and split-case pumps, and its compactness and sturdiness qualify it for portable and semi-portable as well as stationary service.

The new F-M pump is well adapted for all classes of general pumping serv-

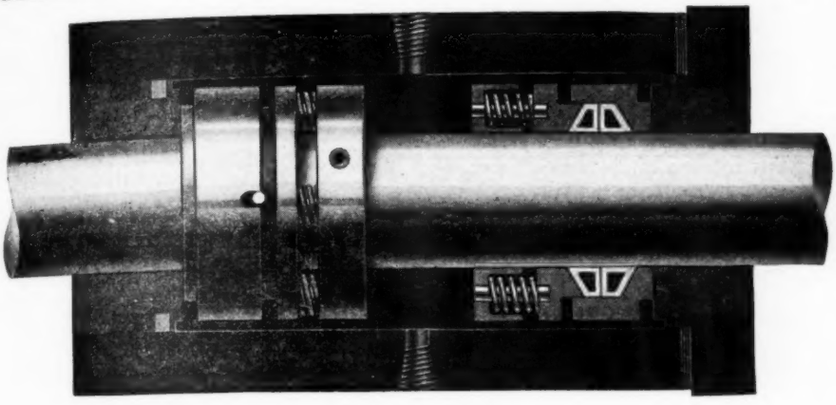
ice with liquids low in viscosity and free from excessive foreign matter, the makers state. Because of its compact design, the pump is especially advantageous where space is limited. No special foundation is required; the pump is complete in itself and can be mounted in any convenient horizontal, vertical, or angular position. Installation is extremely simple.

This new built-together pump, entirely designed and built in one factory, consists essentially of a two-stage centrifugal pump, with enclosed bronze impellers, mounted directly on the shaft of an F-M splash-proof motor. There are no flexible coupling or alignment problems with which to contend. Two rugged ball bearings, an electric motor construction feature pioneered by Fairbanks-Morse, take all of the radial and unbalanced thrust loads. Impellers for the two stages are placed back to back, compensating thrust. Improved hydraulic design is attained by placing the first stage unit next to the motor and the second stage on the outside, simplifying the cross-over passage and placing the stuffing box under suction instead of pressure. A mounting leg under the pump end gives the unit added stability.

Further information on this new pump will be found in Bulletin 5592, obtainable from Fairbanks, Morse & Company, 900 S. Wabash Ave., Chicago, Illinois.

Dura Seal, a Rotating Mechanical Seal

RECENTLY the Durametallic Corporation, of Kalamazoo, Michigan, which specializes in the manufacture of mechanical packings, has developed a rotating mechanical seal known as Dura Seal.



Double Dura Seal

Dura Seal is the result of a determined effort to overcome the difficulties experienced in successfully sealing rotating shafts on pumps, mixers, and other types of equipment having rotating shafts, handling all petroleum products, acids, chemicals, and fluids containing abrasives.

Due to the limited choice of materials from which such packings may be made, difficulties, often insurmountable, are encountered because of corrosive fluids. The choice of materials for the manufacture of Dura Seal is almost unlimited, as it can be constructed of any material or combination of materials that can be machined or ground, thus the problem of corrosion and to a great extent that of electrolysis is overcome, the manufacturers state.

Because flexible packing must be compressed strongly against the shaft, excessive wear always results when grit is present. The seal obtained between the rotating member and the stationary member is so close that no grit, nor fluids, even under high pressure can pass between the sealing faces, it is stated.

The accompanying illustration shows Dura Seal assembled in a stuffing box. Attention is directed first to the construction of the rotating unit that consists of three rings. First the collar is securely fastened to the shaft by set screws, and must rotate with the shaft. The power obtained from the shaft by the collar is transmitted to the other two rings of the rotating unit by means of rigid pins. This construction provides a positive drive that will not slip and as the Dura Seal is rotating with the shaft all wear on shaft or sleeve is eliminated, the manufacturers say. Tension springs made of suitable materials, corrosion resisting when necessary, exert a forward pressure, holding the revolving, lapped sealing face in complete contact with the face of the insert in the stationary member of the assembly.

With Dura Seal friction loads are reduced and this reduction in friction eliminates the fire hazard and no case of fire caused by Dura Seal has ever been reported, although it is being used on centrifugal pumps for sealing extremely inflammable liquids and gases, including all light ends of petroleum, the makers state.

Special lubricating devices have been developed for lubricating the sealing surfaces of Dura Seal wherever required. These lubricating devices are so constructed that no oil or grease can contaminate the contents of the pump.

Airco Develops New Alloy-Steel Rod

THE Air Reduction Sales Company, New York, N. Y., has developed a new gas welding rod, the Airco No. 1 High Ductility Alloy Steel. It has been designed to meet the present-day demand for increased ductility and general improvement in quality of both single and multi-layer steel welds.

An outstanding feature of the Airco No. 1 Rod is its ability to withstand considerable heating without burning.

An examination of the physical characteristics of the new rod discloses the following features:

(1) Free bend ductilities of single layer welds, range from 20 to 30 percent, depending upon the composition of the steel.

(2) Free bend ductilities of multi-layer welds, up to 40 percent on low- and medium-carbon steels.

(3) Ultimate tensile strengths in excess of 60,000 lb. per sq. inch.

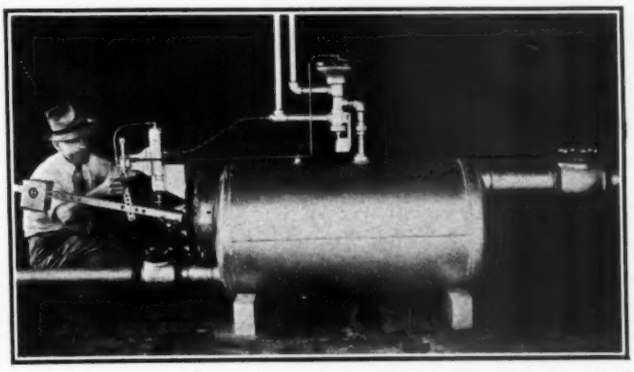
(4) Specific gravity of welds, 7.80-7.86.

(5) Charpy impact values on key-hole notched specimens at 70 deg. fahr., from 15 to 30 ft-lb.

(6) Rockwell hardness of weld metal from B60 to B85, depending on carbon content of base metal and type of weld.

B. S. & B. Automatic Flow

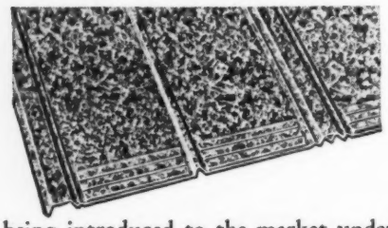
THE new B. S. & B. Automatic Flow Case is an apparatus for boosting oil into the stock tanks from those separators working at low pressures. It is used as an automatic drip in wet gas lines operating under vacuum. The liquid flows into the case. the float rises and trips a three-way valve; the intake valve closes, the outlet valve opens, the outside pressure valve opens and the pressure drives the liquid to the tank or other receptacle.



The Automatic Flow Case is equipped with three-way gas valve control and is strictly automatic, requiring no attention. It is operable on a small volume of gas from outside source, and the separator cannot flood. The capacity of the device is 1000 bbl. of oil per 24 hours. The gas required is 24.4 cu. ft. per dump or 24,000 cu. ft. per 24 hours, free gas, when operating at 25-lb. per sq. in. pressure and at full oil capacity. The unit weighs 650 lb. and is manufactured by Black, Sivalls & Bryson, Inc., Oklahoma City, Oklahoma.

Triple Drain Channel Roofing

A NEW roofing product has been developed by Republic Steel Corporation, Cleveland, Ohio, and is now



being introduced to the market under the trade name of Republic Perfected Triple Drain Channel Roofing.

A chief feature of Triple Drain's construction lies in the use of four ridges and three valleys in each channel unit, thus providing three drainage channels instead of the conventional one or two. Because of this innovation, neither driving rain nor capillary attraction (Syphoning or seepage) can cause leaks.

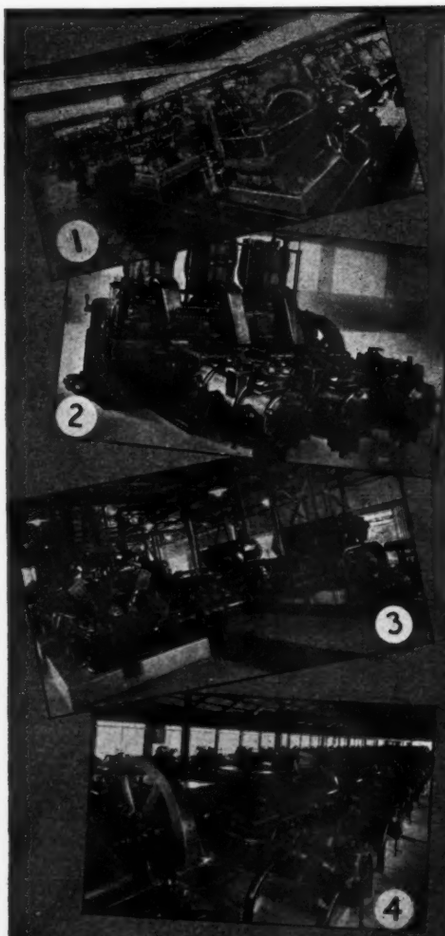
A beaded channel makes a tight fit at the overlapping edge, creating a vacuum action. Any rain passing this point is carried into the center channel through the action of gravity.

For convenience, the proper area for nailing Triple Drain roofing is indicated clearly by blue lines on each sheet. Triple Drain is available in three types of metal: steel, copper-bearing steel, and rust-resisting Toncan Iron, an exclusive product of Republic Steel Corporation. It is supplied in 26, 28, or 29 gauge and in lengths ranging from 5 to 12 ft., with a covering width of 24 inches.

The addition of Triple Drain rounds out Republic's line of roofing products, which now includes corrugated sheets, pressed standing seam, V-crimped, DCL roll and roll and cap roofing, super dry channel type, Super X shingles, plain and corrugated ridge roll, corrugated eave joint, gambrel joint and flashing, roll valley, weather board siding, plain, rock, and brick siding.

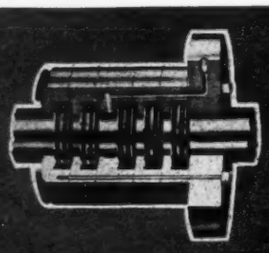
Triple Drain and other roofing products are available through the more than 100 distributors of Toncan Iron and other jobbers of sheet products throughout the United States.

Seal your reciprocating piston rods
the way so many engine and compressor operators do... with
COOK'S METALLIC PACKINGS



Wherever you may look throughout the oil and gas fields you will find COOK'S Metallic Packings predominating on the power and compressor rods of gas pumping and gasoline extraction engines. Noteworthy applications are represented by the engines, shown in the accompanying illustrations, that come factory equipped with COOK'S modern Packings.

Make sure you get the genuine COOK'S Packings when buying new equipment by specifying their use. For existing equipment communicate with us direct, or our nearest branch office.



1-COOPER-BESSEMER CORP.
2-CLARK BROTHERS COMPANY
3-INGERSOLL-RAND COMPANY
4-WORTHINGTON P&M CORP.

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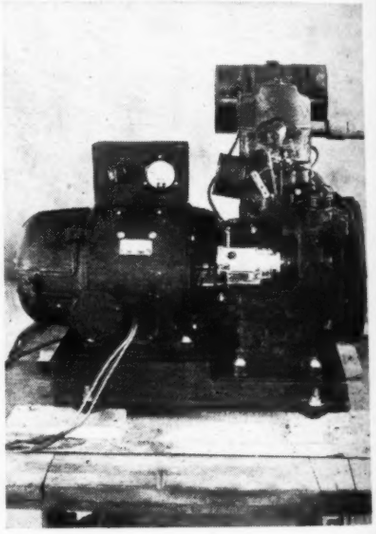
Gas-O-Lectric Power Plants

GENERAL Power Company, Tulsa, Oklahoma, announces the distributorship for the Pioneer Gen-E-Motor Corporation's new line of Gas-O-Lectric power plants. These units being small in size, are ideally designed



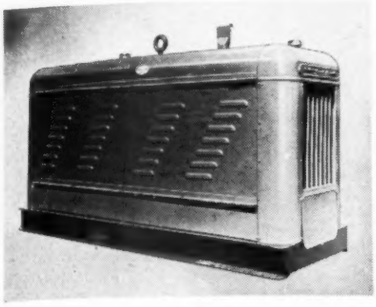
for oil field use on drilling rigs, camps, and work that requires portable flood lighting, and power stations.

The 110 volt A-C., 300-watts unit will operate from 12 to 16 hours on one gal. of gas. All units are equipped with automatic push button starting. Engine is equipped with pulley to drive small machinery. Generator is mounted solidly to the crank case of the engine.

All units are combination a-c. and d-c., driven by gasoline engine. Remote control plants are available. Units are made in sizes of 300 watts, 600 watts, 1000 watts, 1500 watts, and 1800 watts. Priced from $109.50 to $410.00, f.o.b. Chicago.

Wilson Yellow Jacket Pipe Line Machine

A NEW electric welding machine designed exclusively for pipe line work has been announced by the Wilson Welder and Metals Company, Inc., of 60 East 42nd Street, New York, N. Y. It is obtainable in 300 and 400



amperage capacities and is distinguished by its color and the name "Yellow Jacket".

New features that contribute toward the machine's dependability under these extreme conditions, are: double sediment collectors for carburetor supply; improved fool-proof idling device; large 36-gal. capacity gasoline tank; and improved current switch. Other features are: close coupled design; a lowered center of gravity of one ft.; light-weight reinforced base and framework; center lifting bail; and double-radiator protecting grill.

The distributor and other parts are easily accessible and for operating purposes two hinged panels are placed on each side, thereby permitting instant and easy access to all controls. Optional equipment includes either battery or magneto ignition.

The 2-in. "Little Landis" As a Portable Unit

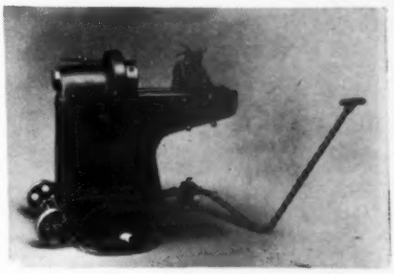
THE Landis Machine Company of Waynesboro, Pennsylvania, has developed a new mounting for their 2-in. "Little Landis" pipe threading and cutting machine, so as to permit moving the machine readily from one location to another.

As shown by the illustration, two wheels are used at the rear of the machine and a single guide wheel in a unit with the handle is used at the front end.

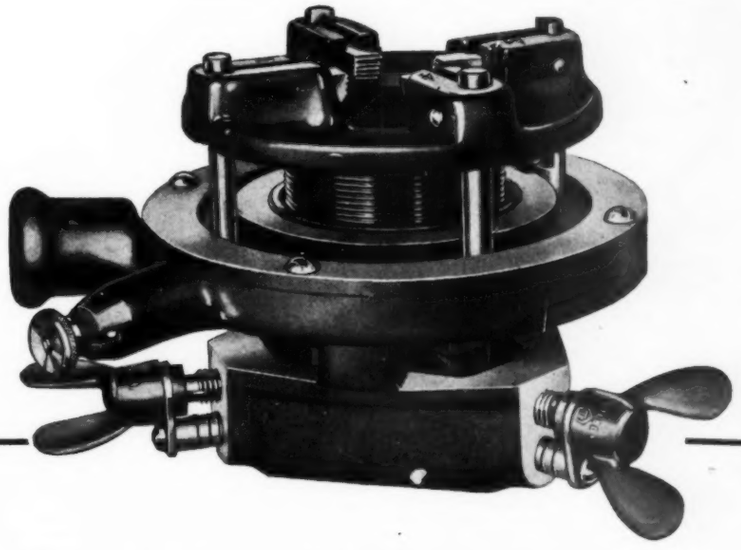
The guide wheel and handle are detachable and no interference from them is experienced by the operator. Removing the handle and wheel automatically lowers the machine to the floor, allowing it to rest solidly on its own base.

To move the machine from place to place, it merely is necessary for the operator to raise the handle until the swivel can be hooked into the swivel bracket fastened to the front end of the machine bed. Pulling down on the handle then raises the machine approximately 2 in. from the floor and it readily can be wheeled to any desired location.

Equipped with an extension cord for plugging into a convenient socket, the "Little Landis" mounted on wheels makes an ideal portable unit for threading pipe from ¼ in. to 2 in., in-



clusive, or bolts up to 1½ in. in diameter, the manufacturers state.

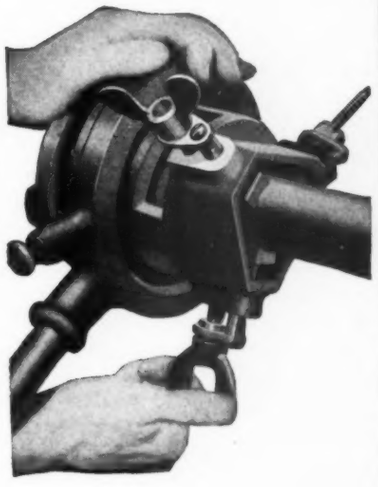


THE EASIEST OPERATING—

. . . tool for cutting 1 to 2-in. threads is a "TOLEDO" No. 1BR—because:

1. A separate set of dies for each size pipe gives the proper cutting angle and clearance for each size.
2. Famous "TOLEDO" die receding principle reduces pull.
3. Accurately fitted parts make for smooth, efficient operation.

Specify a "TOLEDO" No. 1BR for better results. Sold by leading Oil Well Supply Dealers.



THE TOLEDO PIPE THREADING MACHINE COMPANY
TOLEDO, OHIO
New York Office, 72 LaFayette Street

"TOLEDO"
BETTER THREADS

The CAVINS PERFORATION WASHER

The Cavins Perforation Washer is a combination of the Up-Trip and Pack-Off Shoe (shown here) with The Cavins Automatic Hydraulic Suction Bailer.

A Valuable Aid in ELIMINATING SAND BRIDGES

The source of a sand bridge can be eliminated by thoroughly washing the perforations at the point where loose sand runs into the well, with The Cavins Perforation Washer. If you are troubled with sand bridges, an occasional treatment of this kind will enable your well to stay on production for a much longer period of time. The Cavins is indispensable for this purpose.

Send for Catalog and Performance Data

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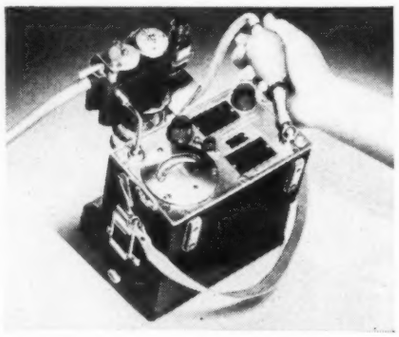
UCC Gas Indicators

THE Linde Air Products Company, New York, N. Y., announces a new line of gas indicators, developed for quickly and easily detecting explosive or irrespirable gas-air mixtures,



the UCC Gas Indicators. These instruments are designed to fulfill the requirements of public utilities, gas plants, shipping companies, petroleum companies, paint and lacquer companies, solvent manufacturers, fire departments, and insurance companies locating underground leaks, establishing purge-end points, and determining hazardous conditions in manholes, oil tankers, oil storage tanks, holds of ships, sewers, conduits and tunnels.

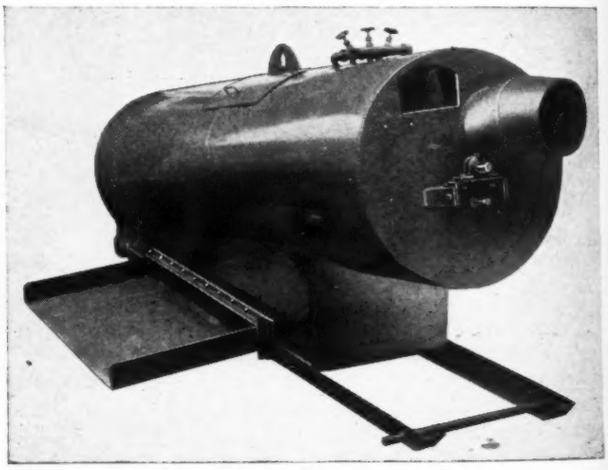
UCC Gas Indicators are available in three models. The UCC Combustible Gas Indicator Model 12-B is for the detection of combustible gases or vapors. A graduated meter scale indicates by direct reading whether combustible gases are present, and, if they are, whether concentrations are above, within, or below explosive limits. For increasing the utility of this instrument, a flame-type safety lamp attachment is available that makes it additionally possible to detect oxygen deficiencies.

The UCC All-Service Indicator Model B-1 combines three units in one. It shows the presence of combustible gases, indicates an oxygen deficiency, and, in addition, includes a toxic chamber for determining the presence of carbon monoxide and hydrogen sulphide in dangerously toxic concentrations.

Both the Combustible Gas Indicator and the All-Service Gas Indicator are equipped with a patented and exclusive air dilution valve. By means of this valve, incoming samples can be diluted with any volume of air, thus making it possible to detect flammable conditions that might not otherwise be indicated due to a lack of oxygen. It also permits following a complete purging operation from start to purge-end point with the use of inert gas as a purging medium. It is indispensible in locating underground leaks when the concentration in bar holes is above the lower limit of flammability.

Hudson-Boucher Automatic Shale Separator

THE Hudson-Boucher Automatic Shale Separator is manufactured by Lucey Products Corporation, Tulsa, Oklahoma, and distributed through Lucey stores as well as by other leading supply companies. Lucey Export Corporation is export distributor.



Operated by the gravity flow of the drilling fluid against turbine blades attached inside the front end of the screen cylinder, the machine requires no other motive power. Unlike the conventional "shaker" type of separator, the Hudson-Boucher machine effects complete separation by the rotation of the screen unit as the fluid passes through. Clean mud passes through the screen, down into the return trough, while cuttings are discharged out the open end of the screen cylinder.

The screen proper is 6 ft. long and may be adjusted to proper tension by manipulation of the adjusting bars that run the length of the screen. On top of the housing a manifold is provided for the introduction of clear water to thoroughly clean the screen and cuttings. This feature provides for the salvage of much useful mud that ordinarily clings to the cuttings and is lost forever.

Requiring no steam turbine, motor or engine to drive it, the Shale Separator requires a minimum of attention and upkeep expense, its makers state.

S *AFE at any depth.*

I *ncrease drilling speed.*

E *asy to change cutters.*

V *ertical hole assistance.*

E *conomical in service.*

R *eam round, full-gauge hole.*

S *tabilize bits & barrels.*

R *educe danger of twist-offs.*

E *liminate "tight" holes.*

A *ngle of cutters correct.*

M *aximum wall contact.*

E *ffective in all formations.*

R *elieve "walking" of bit.*

S *hear and slice evenly.*

Rotary Chain Announced by Link-Belt

ANNOUNCEMENT is made by Link-Belt Company, Indianapolis, of the development of a new power transmission chain, known as SS-3125 Hyper, for high-speed rotary drilling service. This chain is of 3.125-in. pitch and operates on cut-tooth wheels. It is made in single and double widths, the single chain having an ultimate strength of 115,000 lb., and the double-width chain, 230,000 pounds.

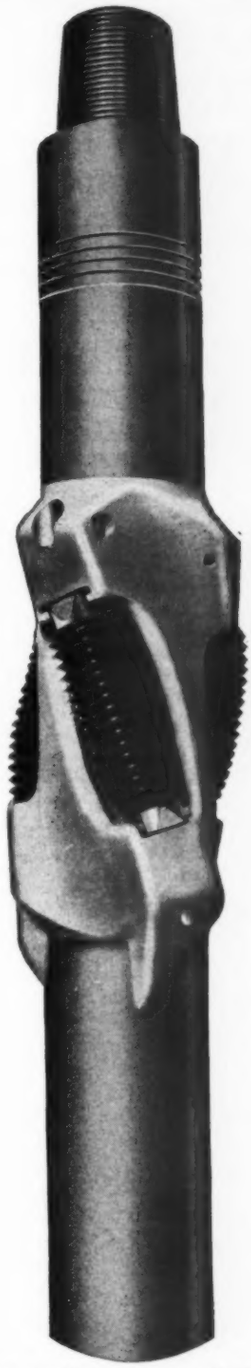
The new chain is announced as having been designed to withstand, with ease, the high speeds and heavy loads encountered in present-day drilling

service. The single width chain is employed on rotary tables and other equipment; the double chain on heavy-duty hoist and engine drives. Cut-tooth steel sprockets with correct tooth design, properly heat-treated, can be supplied.

Features embodied in the design are set forth as follows:

1. Short pitch combined with strength and light weight permits the use of smaller diameter wheels and higher speeds.
2. Design of chain provides ample strength and length of sprocket teeth.
3. Operates on cut tooth wheels, which reduces noise and vibration.
4. Double width chain combines great strength with short pitch and minimum practical width of chain.
5. Generous provision for lubrication. A drip oil feed or an oil-encased drive is recommended.

The new chain is illustrated and described in detail in a new folder, No. 1525, a copy of which will be sent to any reader upon request addressed to Link-Belt Company at Indianapolis, Houston, Los Angeles, or other office of the company.



THEY WILL FIT PROFITABLY IN ***YOUR*** OPERATIONS . . . .

SECURITY
ENGINEERING COMPANY
Whittier, California, U. S. A.

WILSON SUPPLY CO., Houston, Tex.

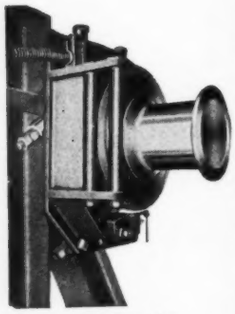
John H. Baird, 420 Lexington Ave., New York, N. Y.

S. B. Schnitter, No. 4 Mary St., Port of Spain, Trinidad, B. W. I.

Geared Power Is Smooth Power

When engineers want smooth positive power—power far in excess of the actual needs at hand—they turn to gears for their driving force . . . and that's exactly what MacClatchie engineers have done in the Gearomatic Cathead.

Geared two to one, this husky cathead gives DOUBLE the power at HALF the line shaft speed. It breaks the largest, most stubborn tool joints with the smooth ease of a Titan . . . without jars, without jerks, yet with perfect control.



MacClatchie Gearomatic CATHEAD

And check this—a positive kick-out device permits one revolution — and one only—per pull . . . there's no danger of fouled lines injuring workmen or damaging rig equipment when you use the MacClatchie Gearomatic!

Contact your nearest MacClatchie representative for complete information on this modern tool . . . it's a money saver!

Made in Two Sizes
The Junior in Sizes Up to 5½"
and the Senior for Larger Sizes

MACCLATCHIE MANUFACTURING CO.
Compton, Calif. Houston, Texas
EXPORT:
Geo. R. Woods, 17 Battery Pl., New York

A Versatile New Lever Motor

DOUBTLESS many have thought of other uses to which pneumatically-operated lever motors could be put if only they were not so restricted by their non-uniform operating characteristics. "At long last," there is a new lever motor on the market that is reported to have been designed and constructed specifically to overcome the traditional shortcomings of this type of device, giving it a much broader field of application.

This new product, manufactured by the Taylor Instrument Companies, Rochester, New York, is known as the Motosteel Evenaction Lever Motor. Outstanding features claimed for the equipment are:

All-steel welded construction—same as the recently announced Motosteel Diaphragm Valve — for maximum strength, lightness of weight, and permanency of alignment.

Precision operation characteristics that insure a uniform relation between the air pressure applied to its diaphragm motor and the resulting lever travel throughout its stroke.

Practically free from hysteresis: A deeper diaphragm with larger area gives greater power and smoothly modulated action. Ball bearing roller bearings guide the full stroke of the push rod. The lever is pivoted in phosphor-bronze bushings that are alignment-reamed in same manner as automobile engine bearings.

A number of take-off holes are provided throughout the length of the lever so that the force or travel of the motor may be adjusted.

Power of either up-stroke or down-stroke can be increased or decreased by spring adjusting nut.

The lever action can be reversed by substituting another lever and transposing the fixed and movable pivots.

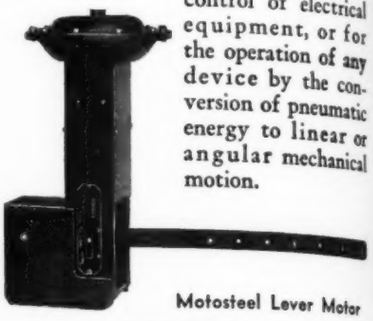
Limit stops are provided for both up-stroke and down-stroke.

Base is drilled for mounting on floor, wall, or ceiling, making possible an infinite number of mounting positions. Works equally well in all positions.

Three sizes of lever motors; in terms of maximum damper areas that can be accurately positioned—25 sq. ft., 50 sq. ft., and 120 square feet. When the Taylor Valv-Precisor or Dubl-Response Control Unit is operated in conjunction with any of these three motors, these damper areas may be increased appreciably.

May be operated by remote manual control, by an electro-pneumatic switch, or by a pneumatically-operated controller. It also may be operated in parallel with a diaphragm valve or other pneumatic equipment, if desired.

These design and operating features equip this new lever motor for the operation of dampers, lever-operated valves, butterfly valves, electrical rheostat for variable speed motors, for the control of electrical equipment, or for the operation of any device by the conversion of pneumatic energy to linear or angular mechanical motion.



Motosteel Lever Motor

Midget Marvel A-C. Welder

TO provide a low cost a-c. welder for use in maintenance and repair as well as light construction work, the Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pennsylvania, has announced the Midget Marvel A-C. Welder. The welder comprises a special transformer and control for a-c. arc welding. The new set has unusually high operating efficiency, averaging 87 percent at normal loads, the makers state. The 60-cycle model complete with all accessories is listed at $123.50. The 50-cycle model is $134.50.

The current range of the sets are from 30 to 140 amp. with 12 steps of current adjustment. The secondary open voltage is 50 on low range and 55 on the high. The primary current input for welding at 140 amp. is 70 amp. at 110 volts and 35 amp. at 220 volts and is proportionately lower when

welding at lower ranges. The set is designed for use with coated electrodes from 1/16-in. to 5/32-in. diameter.

The welder is easily portable, being equipped with handles and four large hard rubber swivel casters for readily moving to convenient locations. The 60-cycle set weighs 112 lb. and the 50-cycle set weighs 130 pounds. Each welder is 14¼ in. high, 10¾ in. wide, and 17⅞ in. long including handles.

BUILT TO TAKE IT . . .

The "MODEL 110" CLEVELAND

"Digs Anywhere—Anytime"

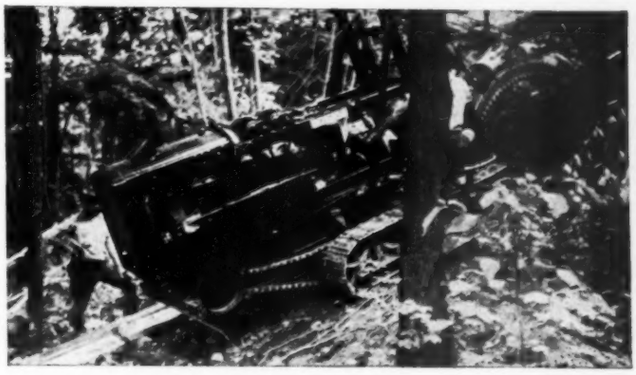
Wherever the job, regardless of the character of the country or the severity of the digging—"Clevelands" are built to take it.

Super Quality of construction adds strength and dependability and insures performance.

Fully perfected, you can rely on "Clevelands" to get your work done because they are built for tomorrow's job as well as today's.

Remarkable performance on past and present pipe line projects supported by a willingness of "Cleveland" owners to "repeat" purchase substantiates the above statements.

If you want to know how and why "Clevelands" deliver maximum performance at minimum costs, contact us immediately, we'll do the rest.



Visit our exhibit at the OIL-WORLD EXPOSITION *in Section 1020*

THE CLEVELAND TRENCHER COMPANY

20100 St. Clair Ave. **Cleveland, Ohio**

One important "Cleveland" idea illustrated at left. High-speed, low-cost transportation via special trailer. Load or unload in 10 to 15 minutes. Machine-savings made available even on scattered short lines, "hot-spot" reconditioning, etc.

CLEVELANDS

Certified by Service
MORE water is cooled by Marley water cooling systems than by any other kind. THE MARLEY CO. Kansas City, Missouri
MARLEY
WATER COOLING SYSTEMS

What SHAPE

ARE YOUR wells—in?

Sand and sediment in your wells make them poor producers; clean them out quickly and at small cost with the MILLER—*the Sand Pump with the powerful suction action that is in world-wide use.*

The MILLER is made in diameters of 2½, 3, 3½, 4, 4¼, 5, 5½, 7 and 9 inches and lengths of 20, 25 and 30 feet. 5/32-inch wall thickness in REGULAR Type, ¼-inch wall tubes. HEAVY Type Sand Pumps.

INTERCHANGEABLE BOTTOMS

To Meet Every Condition

● **BAILER BOTTOM**

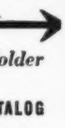
With the Bailer Bottom installed the MILLER is quickly changed to a Bailer giving you a combination of either Bailer or a Sand Pump in one tool.

● **SAND BOTTOM**

Used when tools are run and when well is shot to quickly remove loose material.

● **STAR BOTTOM**

Used for cutting the sand loose.



● **CHISEL BOTTOM**

(In Pump)

With this bottom tightly packed sand can be easily broken in small pieces so it can be picked up in the pump.

Write for Descriptive Folder and Price List

See Page 1186 COMPOSITE CATALOG

PATENTED
NO. 1370340
NO. 1523804
NO. 1707390
NO. 1862628
NO. 1866028
NO. 2055667

MILLER

Sand Pump Co.

General Offices and Shop, Box 4516
OKLAHOMA CITY, OKLA., U. S. A.

Branch Shops and Offices:
SAPULPA, OKLA. and KILGORE, TEX.

FOR SALE BY SUPPLY STORES EVERYWHERE

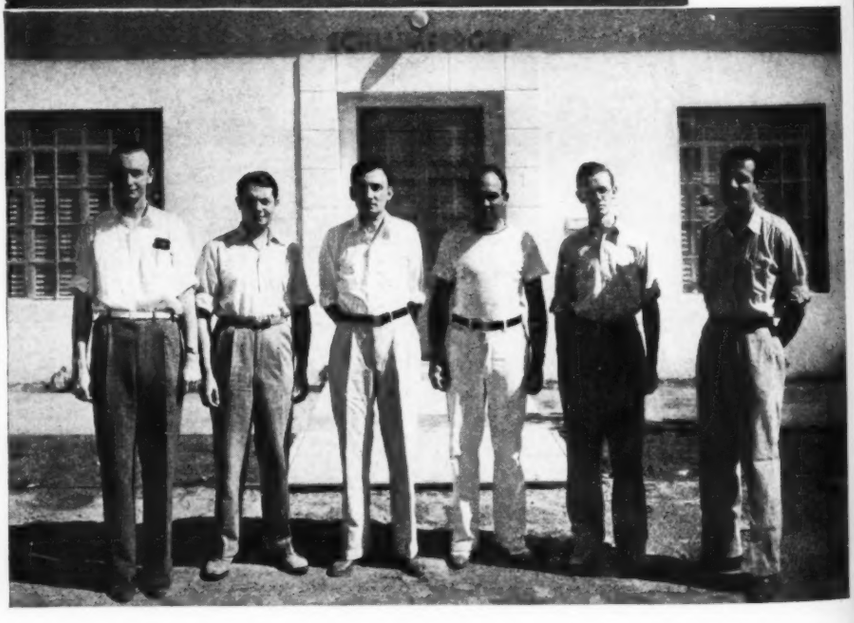
Schaffer Opens New Houston Plant

For better service in the Gulf Coast and Mid-Continent areas, and to handle a greatly increased volume of business, Shaffer Tool Works recently moved into their new plant at 6006 Navigation Boulevard, Houston, Texas.

Located on a two-acre site this first unit is 60 ft. by 120 ft. in size, and in addition to the necessary machinery for constructing, repairing, and servicing the complete line of Shaffer high-pressure control equipment, fishing tools, and specialties, contains offices and warehouse room.

New Home for Schlumberger at Bakersfield, California

The Bakersfield branch of the Schlumberger Well Surveying Corporation has moved into its new home on the northeast corner of 34th and L streets in Bakersfield, California. The new building was especially designed for the use of the company, and provides spacious offices, drafting rooms, and equipment rooms. It is of Spanish architecture, with tile roof and large windows. A modern air-conditioning plant maintains the temperature and humidity at a comfortable level regardless of how hot the summer weather may be.



(Left) The new Bakersfield home of Schlumberger Well Surveying Corporation. (Below) Personnel of the Bakersfield Branch: (Left to right) R. Ford; M. Lebourg; J. H. Gallois, manager; Dick Richards; Dick Morris; J. Jouanet.

New Directors Appointed For International Petroleum Exposition

Fourteen new directors have been appointed to the board of directors of the International Petroleum Exposition, which will be held May 14 to 21, 1938, in Tulsa, Oklahoma, according to an announcement by President W. G. Skelly.

MODERNISTIC CAFETERIA BUILDING THAT WILL BE CONSTRUCTED

The Exposition, which is owned and operated by the members of the oil industry as a non-profit institution, represent the production, pipeline, refining, and marketing divisions of the industry, and board members are selected from these divisions.

New directors include: Dr. G. Egloff, director of research for Universal Oil Products Company, Chicago, Illinois; A. A. Moody, of Jarecki Manufacturing Company, St. Louis, Missouri; and C. F. Roeser, president of the Independent Petroleum Association of America, Fort Worth, Texas. Those of Tulsa are: D. E. Buchanan, of Hanlon-Buchanan, Inc.; J. Garfield Buell, independent oil operator; C. F. Camp, of Arrow Drilling Company; Dr. C. K. Francis, Petroleum Technologist; A. J. Kerr, of Midwest Equitable Meter Company; John E. Mabee, of Mabee Consolidated Corporation; E. B. McFarlin, independent oil operator; Chas. L. McMahon, independent oil operator; A. O. Olson, of Olson Drilling Company; and Frank Wolfe, drilling contractor.

Earl Sneed, Independent Tulsa oil operator, has been re-appointed chairman of the housing committee for the tenth Tulsa show, and reservations may be made through this committee at 220 East Third Street, Tulsa, Oklahoma.

Work will begin this month on the new air-cooled cafeteria building, which is to be built at the east end of the International Petroleum Exposition grounds, according to W. B. Way, general manager. The building will be 80 ft. by 120 ft., modernistically designed interior and exterior, and complete with concealed lighting fixtures, and the latest dining facilities. It will be 50 percent larger than the previous building, and will be a two story brick and stone structure, which will open off on the new Skelly Drive.

New Linde Sales Office

The Linde Air Products Company, Unit of Union Carbide and Carbon Corporation, has opened a new sales office in Oakland, California, at 3710 San Pablo Avenue. The opening of this new office on September 1, 1937, brought the number of Linde offices throughout the country to a total of 33. This office will serve the Oakland area, supplementing the San Francisco office.

B-M-W Admore

Insert Pump Anchors

Principal Advantages are . .

1. No Working Barrels.
2. No Seating Nipples.
3. No Mechanical Shoes.
4. No Pulling of Tubing.
5. Packs off and holds down directly in the tubing itself.
6. Saves on sucker rods and other equipment where fluid level is high and well can be pumped above bottom.

Obtainable at Supply Stores:

Leading B-M-W Products are sold at supply stores, including . . ● ADMORE Insert Pump Anchors; ● NEILSON TOOLS (Safety Sucker Rod Hooks, Tubing Hooks, Rod Elevators, Sucker Rod Sockets, etc.); ● BALLS and SEATS (made for every pumping service); ● ADMORE Liner Barrels; ● TEX TYPE Plunger Fittings and Valves; and ● COLLINS Belt Clamps.

BRADFORD MOTOR WORKS INC

OIL WELL SUPPLIES

BRADFORD, PA. — TULSA, OKLA.

DON'T WAIT...

Only a limited number of the first installments of "THE PETROLEUM ENGINEER'S CONTINUOUS TABLES" are now available.

To get them from the beginning enter your subscription at once.

Rates: 1 year $2.00

THE PETROLEUM ENGINEER,
P. O. Box 1589, Dallas, Texas. Date_____

Enclosed is $_____ for a _____ year (new) (renewal) subscription.

*Name*_____

*Title or Occupation*_____

*Company*_____

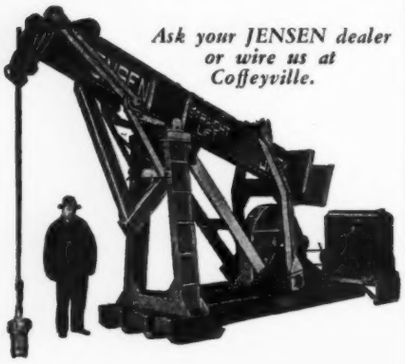
*Street or P. O. Box*_____

*City*_____ *State*_____

KEEP YOUR SUCKER RODS STRAIGHT!

There is no economy in pumping equipment that bends and lashes the sucker rods at every stroke.

JENSEN Pumping Units have an absolutely straight lift. We design them not only for economy and efficiency in themselves, but to prolong the life and satisfactory service of the other well equipment. We've made and perfected pumping equipment over a period of 19 years with the interested co-operation of successful producers.



Ask your JENSEN dealer or wire us at Coffeyville.

JENSEN BROTHERS MANUFACTURING CO.

. . . Coffeyville, Kansas

Sales Engineer Oil Refinery Equipment

Representative builder of oil refinery equipment will consider applications from men qualified in this field; excellent opportunity; compensation by salary. Applications must contain full details, personal and business, to receive consideration.

Address Sales Engineer Box 1589 Dallas, Texas

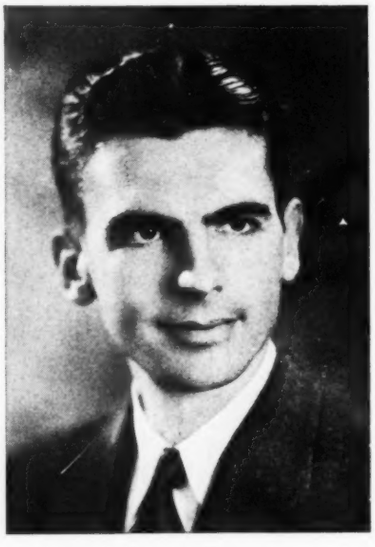
W. L. Shelgren Michigan Representative For Dresser

W. L. Shelgren, according to a recent announcement from S. R. Dresser Manufacturing Company of Bradford, Pennsylvania, is now their sales representative for the state of Michigan (except Detroit). The Dresser company manufactures a complete line of flexible pipe couplings and pipeline repair devices. With an experience in pipe-joint engineering and knowledge gained with Dresser over a period of 11 years, Shelgren will be able to give gas, oil, and water companies in this territory the benefit of considerable experience in the solution of pipe-joint problems. His headquarters will be at the home office in Bradford, Pennsylvania.

W. L. SHELGREN

B. (Lou) Bronzan Made Assistant Sales Manager Baash-Ross

The promotion of B. (Lou) Bronzan to the post of assistant sales manager of Baash-Ross Tool Company is announced by H. C. Ross, vice-president and sales manager of the company.



B. (LOU) BRONZAN

Bronzan has been a member of the sales department for six years, and until his recent promotion he was head of the order department. His headquarters will continue to be at the general offices at 5512 Boyle Avenue, Los Angeles, California.

STRAIGHT TALK.... *about* CROOKED HOLES

Write for literature

SPERRY-SUN WELL SURVEYING CO.

1608 Walnut Street, Philadelphia, Pa.
425 Petroleum Building, Tulsa, Okla.
3118 Blodgett Avenue, Houston, Texas
549 East Bixby Road (3800 Block—Atlantic Ave.) Long Beach, Calif.
Bank of Lafayette Bldg., Lafayette, La.
c/o Elks Club, 17th and I Streets, Bakersfield, Calif.

HUNT NOW OFFERS these 7 SERVICES:

Wire Line Coring
Complete Bit Line
Rig Unitization
Boiler Repairing
Machine Work
Oil Field Welding
Field Repair Work

HUNT TOOL COMPANY — HOUSTON, TEX. — Formerly AUTHORIZED APPLEMAN BIT SERVICE CO. — HUNT WIRE LINE CORE BARRELS

SERVICE SHOPS:
Houston, Joinerville, Talco, Corpus Christi, Bay City, Alvin, Texas . . . Rodessa, Jennings, Houma, Louisiana.

Max Hofmann New Export Sales Manager for Waukesha

Max Hofmann has been appointed to the position of export sales manager of the Waukesha Motor Company, succeeding M. E. Nicklin. An engineer of considerable experience, Hofmann joined the Waukesha Motor Company in 1926, coming from the Argentine branch of Korting Brothers, German Diesel engine building firm. His work there as a Diesel installation engineer, his subsequent journeys, throughout Europe, Africa, and both Americas, and his ability to speak four languages fluently make him well qualified for his new position.

MAX HOFMANN

Guy E. Daniels Export Representative for Green Head Bit

Paul R. Snetcher, Green Head Bit and Supply Company, Oklahoma City, Oklahoma, announces the appointment of Guy E. Daniels, 30 Rockefeller Plaza, New York City, as their export representative. Daniels was for ten years in Maracaibo, Venezuela, with the Shell Petroleum Corporation. While in the purchasing department of Shell Daniels spent nine years in the field that gave him first-hand knowledge of oil field tools and equipment. Before going with Shell Daniels was with Union Oil Company of California.

GUY E. DANIELS

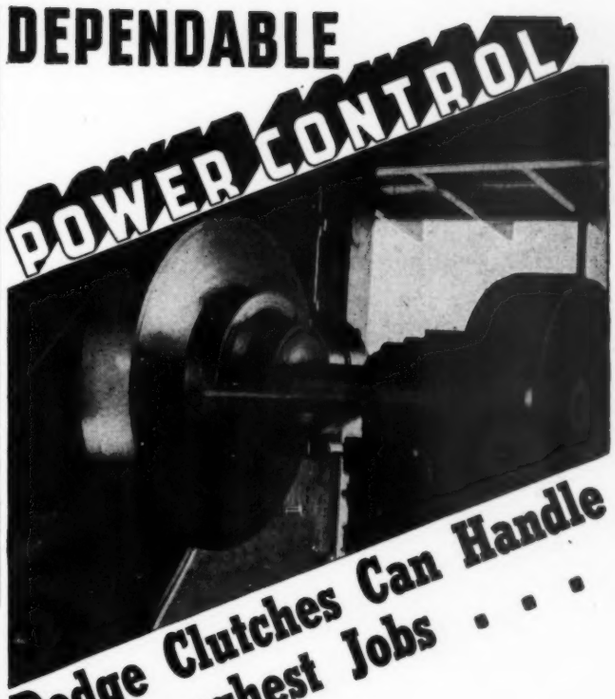
Snetcher says that Green Head Bit and Supply Company are now marketing their bits as well as line scale in both export and domestic fields.

Oil Men Head Tulsa University

A. E. Bradshaw, president, National Bank of Tulsa, "The Oil Bank of America," has been elected to membership on the University of Tulsa Board of Trustees. He will work with: John Rogers, attorney and vice chairman; C. H. Lieb, president, Carter Oil Company; Nelson K. Moody, president, Sinclair Prairie Oil Marketing Company; J. C. Denton, counsel, Mid-Continent Petroleum Corporation; J. H. Gardner, president, Gardner Petroleum Company; Fred L. Dunn, executive vice-president, First National Bank and Trust Company; Johnson D. Hill, president, Atlas Life Insurance Company; Ralph O. Dietler, vice-president, Stanolind Crude Oil Purchasing Company; Dr. C. W. Kerr, pastor, First Presbyterian Church; and Doctor C. I. Pontius.

The University's Department of Petroleum Engineering ranks among the best in the country and students come from all parts of the world to enroll for training.

DEPENDABLE POWER CONTROL



Dodge Clutches Can Handle the Toughest Jobs . . .

Dodge Diamond "D" Friction Clutches are efficiently, dependably, and economically adapted to power transmission as well as for application to various types of machinery used in the oil fields. They are ruggedly constructed and capable of handling 100% overload, insuring safety and protection and positive power control under any conditions of service.

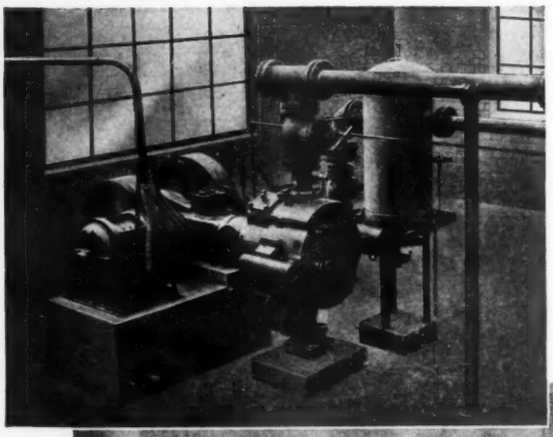
See the Dodge 20-page section in the Oil Field Composite Catalog

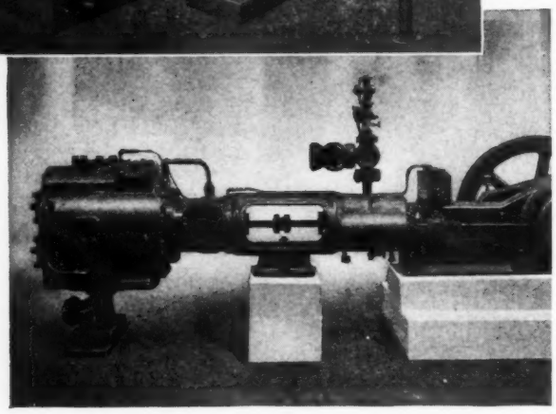
Specify Dodge Diamond "D" Clutches for steady, uninterrupted service. Send for copy of Catalog No. A-200.

DODGE MANUFACTURING CORPORATION
MISHAWAKA, INDIANA, U. S. A.

THE Right DRIVE FOR EVERY JOB

DODGE
MISHAWAKA
THERE IS ADDED VALUE IN THE NAME DODGE





CARBONDALE

Booster Compressors

for producing the extremely low temperatures needed in modern refinery processes

THE economical production of low temperatures, and their maintenance over long period operations, is due to the exceptional design and the construction refinements developed for these units.

One of the refinements, shown in the lower illustration, is the Carbondale Double Seal Stuffing Box . . . providing an extreme safeguard against ammonia leakage, and preventing air leakage inwardly when the low side pressure is below atmosphere.

With this patented stuffing box design, the Carbondale system may be operated just as satisfactorily with low temperature cooling, as with the higher temperatures.

Carbondale manufactures a complete line of equipment for every refinery refrigerating service.

● *Ask for literature*

CARBONDALE
DIVISION
WORTHINGTON PUMP AND MACHINERY CORPORATION
General Offices: HARRISON, NEW JERSEY

CA7-46 *Offices and Representatives in Principal Cities*

CARBONDALE

Trade Personals

W. S. BASSETT, Houston representative of the Lucey Boiler and Manufacturing Corporation, recently completed a few weeks trip through the Rocky Mountain region combining business and pleasure.

●

MAX H. SCHACHNER has been appointed assistant sales manager of the Winton Engine Corporation, subsidiary of General Motors, it is announced by WILLIAM J. DAVIDSON, general sales manager of Winton. His principal responsibility will be direction of the sale of the new Winton two-cycle Diesel engine to manufacturers and distributors.

●

W. A. NEILL has been appointed manager of engineering and sales activities of the Worthington Pump and Machinery Corporation at its recently reopened plant at Holyoke, Massachusetts. Neill, formerly manager of the corporation's Air Tool and Portable Compressor Division at Harrison, New Jersey, will have his headquarters at Holyoke, where the manufacture of portable compressors, rock drills, automotive compressors, and vertical compressors is now underway.

●

RICHARD SEIPT has been appointed sales manager of the Laminated Shim Company, Inc., Long Island City, New York. Seipt has been associated with the sales department of the Laminated Shim Company, Inc., for the past two years.

●

W. P. WHITE, with offices at 1208 N. Broad Street, Philadelphia, Pennsylvania, has been appointed district manager in charge of steel and tube sales in the eastern and southern Pennsylvania district by the Steel and Tube Division of The Timken Roller Bearing Company. C. H. KUTHE will assist White in his new work. A. R. ADELBERG, district manager in charge of Timken Steel and Tube Division sales in New York City, with offices at 165 Broadway, will supervise steel and tube sales in the Philadelphia District as well as in the New York City area.

●

G. HOWARD BODDY, whose offices are in the General Motors Building, Detroit, Michigan, has been appointed representative to handle engineering and sales of the products of Power Piping Corporation, a subsidiary of Blaw-Knox Company, Pittsburgh. Boddy also will handle sales of some of the company's other industrial products in the Detroit territory, although Blaw-Knox construction equipment will continue to be sold through its distributor, WILLIAM P. FAVORITE, 6561 East Seven Mile Road, Detroit.

●

EUGENE H. TRAMMELL, well known in oil well supply circles, formerly with the Lucey Export Corporation, has opened export offices at 30 Rockefeller Plaza, New York City. He will handle the export lines of Layne and Bowler, Houston, Texas, and the Mission Manufacturing Company, Houston, Texas.

●

WALTER DOUGAN WOOD, JR., member of the discus squad of the 1936 U. S. Olympic team, has been appointed to the sales staff of the Philadelphia office of The Lincoln Electric Company. Under the supervision of G. R. JOHNSON, man-

ager of the Philadelphia office, Wood will work with O. P. LANG, H. H. STAHL, R. J. COGAN, W. SIVYER, and P. V. GALAMBOS, in supplying arc-welding users in Philadelphia and vicinity with complete welding supply and engineering service.

●

A. J. WADHAMS, vice-president in charge of Development and Research, The International Nickel Company, Inc., has announced the addition of WAYNE Z. FRIEND to the Development and Research Staff. Friend will devote most of his time to technical service on corrosion-resisting materials, particularly Monel, nickel, and Inconel.

●

O. H. ATTRIDGE, Tulsa, Oklahoma, who is chief engineer for Lucey Products Corporation, has been appointed to serve on the Manufacturers' Sub-Committee of the Rotary Drilling Equipment Committee of the American Petroleum Institute. Attridge will serve as an alternate for W. S. EVANS, New York City, who is president of the Lucey Export Corporation.

●

W. W. MCCLELLAN has been appointed to the sales engineering staff of the Lincoln Electric Company's Grand Rapids Office, 314 Building and Loan Building, Grand Rapids, Michigan. He has had extensive practical welding experience. He will be working under the direction of R. D. LAYMAN, who is in charge of the Grand Rapids offlce.

The Marley Company Opens West Coast Branch

The Marley Company, Kansas City, Missouri, has opened a West Coast branch office at 1144 South Grand Avenue, Los Angeles, California, with Robert K. Leilich in charge.

J. W. McKewon, Vice-President of O. C. S. Manufacturing Company, Succumbs

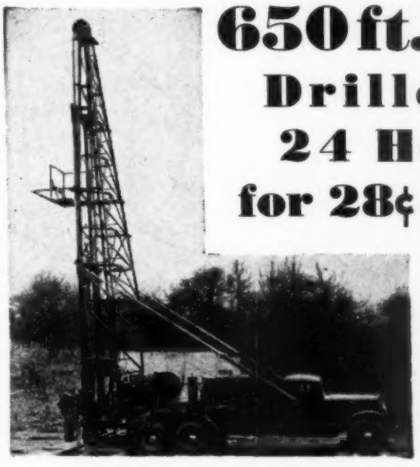
J. W. McKewon, vice-president in charge of sales of the O. C. S. Manufacturing Company, Coffeyville, Kansas, died in Tulsa, Oklahoma, recently, following an emergency operation for appendicitis. McKewon was born in Old Trimdon, County of Durham, England, April 30, 1894. He came to the United States in March, 1912, taking up employment in the coal fields near Pittsburg, Kansas. Remaining there until the following year he then associated himself with The Continental Supply Company at Tulsa as stenographer, from which position he was advanced to that of store manager. For the following ten years, except during the time spent in France with the Army, he was continuously employed by Continental, being associated with Douglas R. Brown during the latter years of his service with that company. In January, 1926, he became identified with the O. C. S. Manufacturing Company at Tulsa as salesman and was elected to the vice-presidency in 1935.

J. W. McKEWON

Interment was in Memorial Park, Tulsa, Oklahoma.

Surviving are his widow, Bessie Rae, and three sons, Jack, Tom, and Dick, of Tulsa, and his father, Thomas W. McKewon, of Coffeyville, Kansas.

As a token of respect to his memory, plant operations of the company were suspended at the funeral hour.



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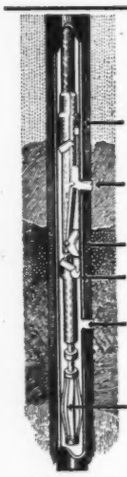

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TRADE LITERATURE

THE TONG TEST AMMETER, manufactured by Columbia Electric Manufacturing Company, Cleveland, Ohio, makes possible instant a-c. and d-c. current measurements anywhere —on motors, transformers, cables—underground, on the surface, or on poles, according to the makers.

Briefly, the Tong Test is of the split-electro-magnet type, contains no windings, cannot burn out. Current measurements are made simply by pressing a trigger switch that opens the tongs and encircling them around the conductor. A clear, accurate reading is instantly registered on the meter dial. No break in the circuit or insulation is required, consequently no delays in production. Quickly interchangeable meter dials permit readings up to 800 amperes. The Tong Test bulletin, completely describing this instrument, will be sent upon request. Address Columbia Electric Manufacturing Company, 4528 Hamilton Avenue, Cleveland, Ohio.

●

THE OIL WELL SUPPLY COMPANY, Dallas, Texas, has issued new bulletins describing their No. 6-P hoist, No. 9-P hoist, No. 7-P hoist, their utility pumping jack, the No. 10 pumping unit, and their sucker rods, polished rods, and pull rods. Any or all of these bulletins may be obtained free upon request.

●

THE LAMTEX CASING PUMP, manufactured by the Lamtex Equipment Corporation, 2501 Virginia Street, Fort Worth, Texas, is fully described and its method of installation and adaptability illustrated by sketches in a new bulletin just issued. Copies may be had free upon request.

●

A NEW EDITION of the 68-page insulation booklet, "Barriers To Industrial Waste," has been published by Johns-Manville, New York City. This booklet contains a complete and improved table of recommendations to serve as a guide to the proper selection of J-M insulations for a wide variety of uses in practically all industries.

●

THE ADVANTAGES of welded joints in installing piping systems are discussed in "Welded Piping," a 12-page, illustrated booklet, published by The Linde Air Products Company, New York City. Subjects of particular interest to builders, architects and engineers are treated in sections on: pipe and services to be welded; lighter than standard weight pipe; fast, economical welding methods; layout, drawings and specifications; welded joints and fittings; plan of construction; shop and field fabrication, and piping erection.

●

ALLIS-CHALMERS MANUFACTURING COMPANY, Milwaukee, Wisconsin, has released a new 24-page Bulletin 1832 on "Perforated Metals" for all manner of applications whether requiring rolled or flat plates, in all common commercial grades of steel plates or sheets, or in any other metal material used in screens, in thicknesses up to ¾ in. and sizes of perforation proportioned to the thickness of the metal used.

●

BULLETIN 3600-A2 describes and illustrates the construction and application of Model 36-A Diesel generating sets, manufactured by Fairbanks, Morse & Co., Chicago, Illinois.

These sets are widely used in industrial plants, either as independent units carrying the entire load or for parallel or auxiliary operation in conjunction with other electrical service.

●

A 16-PAGE ILLUSTRATED LIST-PRICE CATALOG No. 1532 on friction clutches, has been completed by Link-Belt Company, Chicago, Philadelphia, San Francisco, and is now available for distribution. Besides giving sizes, dimensions, weights, hp. ratings, and other pertinent tabular data on both Meeseco and Twyncone type of clutches, the book devotes two pages to the subject of how to select and order the right clutch for the service. To obtain a copy, address the nearest Link-Belt office, asking for Book No. 1532.

●

LATEST INFORMATION on the construction of pipe lines by electric welding for transportation of oil, gas, and water is contained in a new bulletin just published by The Lincoln Electric Company, Cleveland, Ohio. The new bulletin, entitled "Building Better Pipe Lines Faster at Less Cost by Shielded-Arc Welding," will be mailed free upon request.

●

A FOLDER ISSUED BY BETHLEHEM STEEL COMPANY, Bethlehem, Pennsylvania, describes their A.P.I. Normalized Sucker Rod, made from selected bars and forged in pyrometrically controlled furnaces to insure proper forging temperatures, and then passed through successive forging dies constructed to give proper grain flow that will eliminate cold shuts and folds. Each rod is given a full-length normalizing treatment to produce maximum fatigue resistance. Special equipment prevents bending and warping during cooling, eliminating any need of cold-straightening. Threading is done in an automatic machine after, not before, heat-treatment.

●

DRILLING OIL WELLS with "Caterpillar" Diesel engines is the subject of a new booklet issued by Caterpillar Tractor Company. Specific examples of "Caterpillar" Diesels powering rotary rigs, cable-tool rigs, and spudders are given. The booklet which is printed in two colors is designated as Form 4373 and may be obtained by writing Caterpillar Tractor Company, Peoria, Illinois.

Promoted to Mid-Continent Division

Earl Allen, formerly in Texas Division of Pipe Coating Department for The Barrett Company, has been promoted to the Mid-Continent Division with headquarters in Kansas City, Missouri.

Homer Duffield Recently Deceased Had Host of Friends in Oil Industry

Homer B. Duffield, who recently died from a stomach disorder, was a native of Pennsylvania and learned the oil business on his father's properties in the Bradford area.

He came west to the southeastern Kansas fields in 1900, and for fifteen years operated drilling tools in Kansas and Oklahoma fields as an independent contractor.

Duffield joined the Youngstown Sheet and Tube Company organization in 1922 when that organization took over the old Mark Manufacturing Company. He remained with Youngstown as field representative on oil country pipe until his death at the age of 54.

Duffield, through his 37 years in watching the Mid-Continent area develop, had a host of friends and acquaintances in the oil business.

He is survived by his widow, Nellie B. Duffield of Tulsa, Okla., a daughter, Cleo Duffield of Erie Pa., a sister, Mrs. Hazel Griffith of Tulsa, and three brothers, Merle Duffield of Chicago, and Earl and C. E. Duffield of Tulsa.

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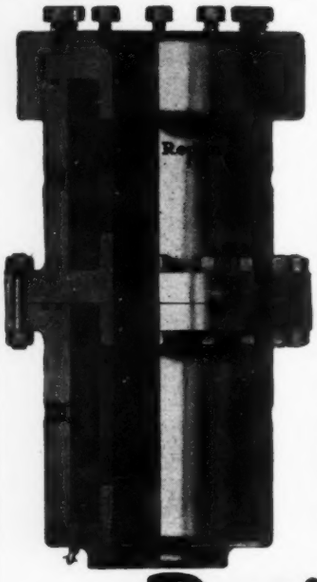

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Book Reviews

Petroleum Technology in 1936. Published by The Institution of Petroleum Technologists, Aldine House, Bedford Street, London, W. C. 2, England. 326 pp. 8 plates. Price, 7/6.

The volume comprises a brief review of technical advance in every branch of the petroleum industry during the year 1936. Abstracts of the most important articles appearing in technical journals have been skillfully combined to constitute a coherent discussion. A comprehensive bibliography accompanies each chapter. The book should prove to be very useful to anyone who desires to keep up with current developments in the oil industry, as it is an excellent guide to the literature.

The chapters on refining and chemical technology surpass in detail and inclusiveness those dealing with prospecting and development. This may be due to the inclusion of a large amount of Russian and other foreign publications not available to nor easily interpreted by the average reader. Nearly all such material pertains to processes, methods, and products of refining. The material in the chapters on geology, drilling, and production is drawn almost exclusively from American sources. An undesirable inversion of the natural sequence results from the transposition of the chapters on drilling and production.

M. E. Nicklin Joins Oil Well Supply Company Staff

M. E. NICKLIN

M. E. Nicklin, export sales manager, has resigned his position with the Waukesha Motor Company to return to the oil industry as assistant to W. C. Ramsey, manager of the Machinery Division of Oil Well Supply Company, with headquarters at Oil City, Pennsylvania. Nicklin entered the employ of the Waukesha Motor Company nearly ten years ago as a sales engineer in the Oil Field Division.

International Acetylene Association to Meet in Birmingham, Alabama

The International Acetylene Association will hold its 38th Annual Convention in Birmingham, Alabama, November 10, 11, and 12. This will be the first time that the convention has been held in Birmingham. Headquarters for the convention will be the Hotel Tutwiler.

Technical sessions will be held each afternoon. Special sessions of unusual interest, the details of which will be announced at a later date, are being planned for the evenings. The oxy-acetylene process for welding and cutting metals will be featured at all these sessions. As a result of a year of unusual development, a series of vitally interesting subjects will be discussed by speakers who are key men in their fields.

Gross attendance at last year's annual convention, held in St. Louis, totaled over 3100 members and guests.

A cordial invitation to attend this convention is extended to everyone interested in the practical applications of the oxy-acetylene process.

Establishes Oil Equipment Service

Bee Russell, for several years a member of the production department staff of Shell Petroleum Company in West Texas and later transferred to Corpus Christi with that department, has resigned to establish Oil Equipment Service for a group of oil industry equipment manufacturers not having complete office facilities in South Texas. Mrs. Russell's firm has established headquarters at 823 Nixon Building, Corpus Christi.

Emrick in Advisory Capacity on Stanolind Staff

BERT EMRICK

Bert Emrick has joined the staff of the Stanolind Oil and Gas Company in an advisory and supervisory capacity for pressure-drilling problems. Emrick, who for many years was with the Burma Oil Company in Burma, India, has had a wide experience in dealing with high pressures and troublesome formations. His headquarters will be in Houston, Texas.

Blaine Johnston General Manager Johnston Oil Field Service Corporation

Blaine Johnston, formerly vice-president of Simms Oil Company and chairman of the Southwest District of the American Petroleum Institute, has been made secretary-treasurer and general manager of the Johnston Oil Field Service Corporation, with headquarters at Houston, Texas. In his new capacity he will have direct supervision of formation and casing testing operations in the Mid-Continent, Texas, and Louisiana Gulf territories.

BLAINE JOHNSTON

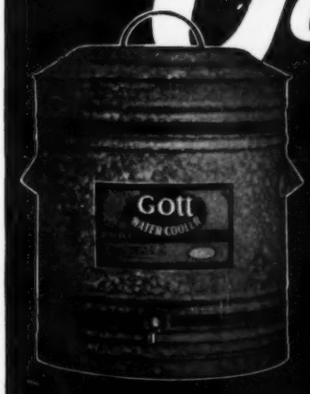
Johnston has long been a leader in petroleum activities. He has a vast knowledge of oil field technique, having had 35 years experience covering practically every oil producing state in the Union.

Correction

In A. Pranger's article "Improved Aids for Drilling-in and Tubing Wells Under Controlled Pressure", published in the August issue of The Petroleum Engineer, on pages 24 and 25, the captions on Figs. 1 and 2 should be reversed.

Gotkool

WATER CANS & COOLERS



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Improved designs give these tongs greater strength and handiness. *Jaws* are drop forged from special steel; are heat treated, hardened and tested for wearing qualities. *Chains* are proof-tested to ⅓ catalog strength (3,600 to 40,000 lb.) *Handles*, forged from high carbon steel, have both stiffness and "spring." Drop forged Chrome-Nickel *Shackel*. Hardened *Bolt*. No finer tongs made. All sizes.

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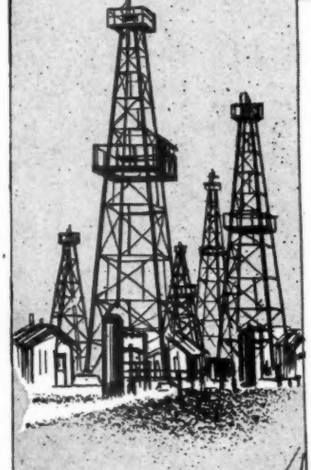
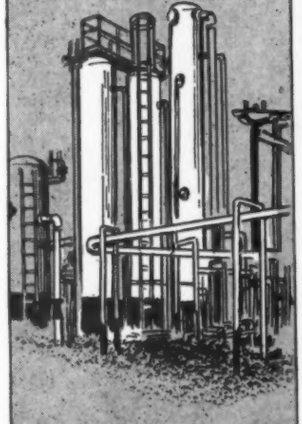
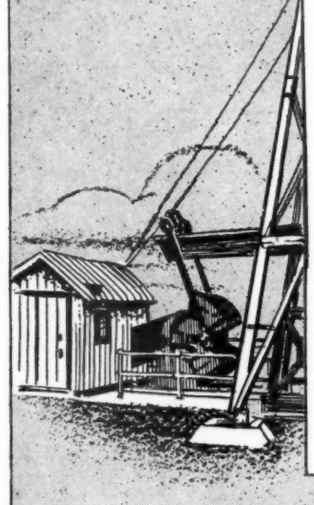
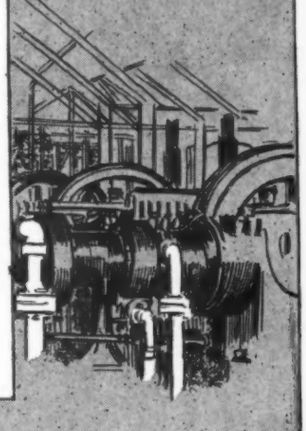


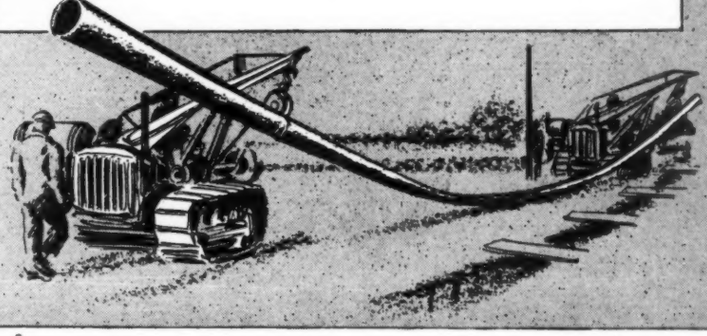






INSTALLMENT No. 4

IN presenting data in tabular form it is necessary to estimate the practical limits of each variable. For maximum utility, the data in any table must cover this entire range. The chosen limits, together with the amount of space available, will determine the interval between values of the independent variables. The space allotted to each variable may be adjusted and is governed by certain limiting details in arranging and setting-up the tables. Even after arranging these details carefully it is not always possible to include every value of each variable. The nearest value given in these tables, however, usually will be close enough for practical needs; if necessary, a still closer value may be found by interpolation. Although interpolation is a familiar process to anyone using tables frequently, its limitations are not so well known. A brief explanation of interpolation will be given with Installment No. 5.



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*This index is revised monthly as additional tables are published.
(*a*) In footnote, "feet" should read "inches".

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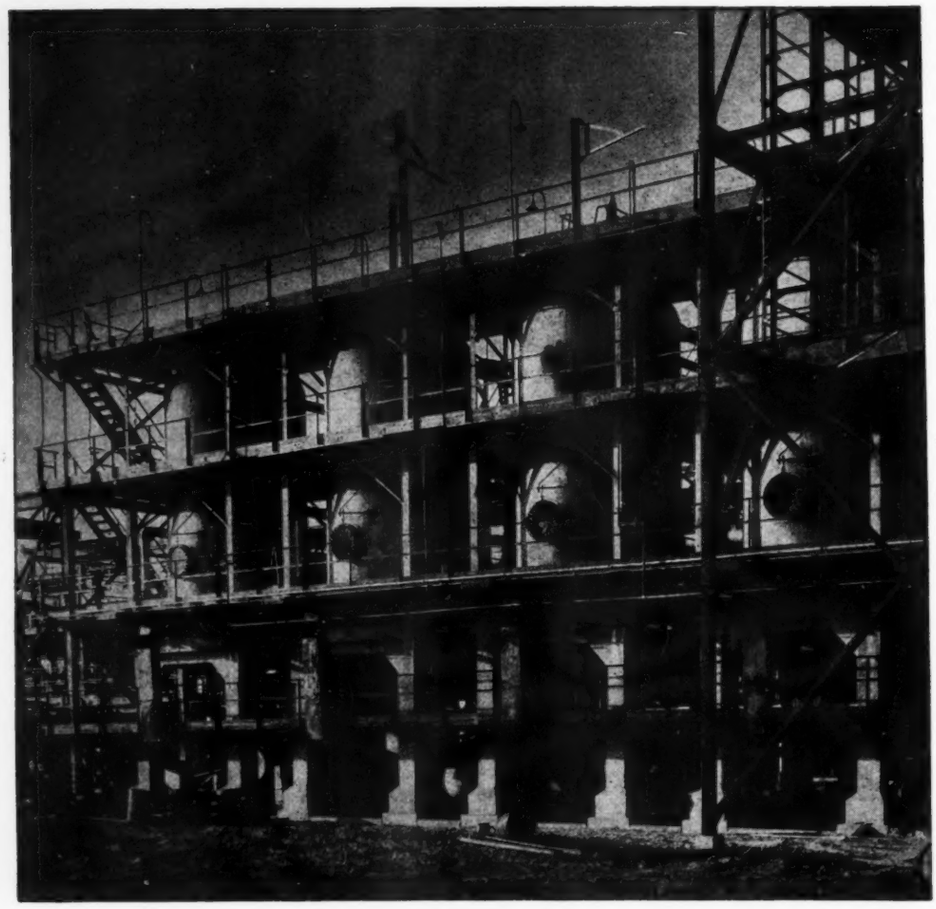
DENSITY AND CAUSTIC CONTENT OF CAUSTIC SODA SOLUTIONS
(15°C or 59°F)

Weight percent of NaOH	Sp. gr.	Gravity, deg. Bé.	Grams NaOH per liter	Lb. NaOH per gal.	Gravity, deg. Bé.	Sp. gr.	Weight percent of NaOH	Grams NaOH per liter	Lb. NaOH per gal.
1	1.011	1.53	10.1	0.08	1	1.007	0.68	6.8	0.06
2	1.022	3.12	20.4	0.17	2	1.014	1.30	13.2	0.11
3	1.033	4.66	31.0	0.26	3	1.021	1.92	19.6	0.16
4	1.044	6.17	41.8	0.35	4	1.028	2.57	26.4	0.22
5	1.056	7.63	52.8	0.44	5	1.036	3.22	33.4	0.28
6	1.067	9.06	64.0	0.53	6	1.043	3.89	40.6	0.34
7	1.078	10.46	75.4	0.63	7	1.051	4.57	48.0	0.40
8	1.089	11.83	87.1	0.73	8	1.058	5.26	55.7	0.46
9	1.100	13.18	99.0	0.83	9	1.066	5.96	63.5	0.53
10	1.111	14.50	111.1	0.93	10	1.074	6.67	71.6	0.60
11	1.122	15.79	123.4	1.03	11	1.082	7.39	80.0	0.67
12	1.133	17.05	136.0	1.13	12	1.090	8.12	88.5	0.74
13	1.144	18.29	148.7	1.24	13	1.098	8.87	97.4	0.81
14	1.155	19.51	161.8	1.35	14	1.107	9.62	106.5	0.89
15	1.167	20.70	175.1	1.46	15	1.115	10.39	115.8	0.97
16	1.178	21.87	188.4	1.57	16	1.124	11.16	125.4	1.05
17	1.189	23.01	202.1	1.69	17	1.133	11.96	135.5	1.13
18	1.200	24.14	216.0	1.80	18	1.142	12.76	145.7	1.22
19	1.211	25.24	230.1	1.92	19	1.151	13.58	156.3	1.30
20	1.222	26.33	244.4	2.04	20	1.160	14.41	167.2	1.40
21	1.233	27.39	258.9	2.16	21	1.169	15.26	178.4	1.49
22	1.244	28.43	273.6	2.28	22	1.179	16.12	190.1	1.59
23	1.255	29.45	288.7	2.41	23	1.188	16.98	201.7	1.68
24	1.266	30.45	303.8	2.54	24	1.198	17.87	214.1	1.79
25	1.277	31.43	319.3	2.66	25	1.208	18.77	226.7	1.89
26	1.288	32.40	334.8	2.79	26	1.218	19.70	239.9	2.00
27	1.299	33.34	350.7	2.93	27	1.229	20.64	253.7	2.12
28	1.309	34.26	366.6	3.06	28	1.239	21.59	267.5	2.23
29	1.320	35.16	382.8	3.19	29	1.250	22.56	282.0	2.35
30	1.331	36.05	399.3	3.33	30	1.261	23.55	297.0	2.48
31	1.341	36.91	415.7	3.47	31	1.272	24.55	312.3	2.61
32	1.352	37.75	432.6	3.61	32	1.283	25.59	328.3	2.74
33	1.362	38.57	449.5	3.75	33	1.295	26.63	344.9	2.88
34	1.373	39.38	466.8	3.90	34	1.306	27.71	361.9	3.02
35	1.383	40.16	484.1	4.04	35	1.318	28.81	379.7	3.17
36	1.393	40.93	501.6	4.19	36	1.330	29.94	398.2	3.32
37	1.403	41.68	519.3	4.33	37	1.343	31.11	417.8	3.49
38	1.414	42.42	537.1	4.48	38	1.355	32.30	437.7	3.65
39	1.423	43.13	555.1	4.63	39	1.368	33.53	458.7	3.83
40	1.433	43.84	573.4	4.79	40	1.381	34.80	480.6	4.01
41	1.443	44.53	591.7	4.94	41	1.394	36.09	503.1	4.20
42	1.453	45.20	610.2	5.09	42	1.408	37.44	527.2	4.40
43	1.462	45.85	628.8	5.25	43	1.422	38.81	551.9	4.61
44	1.472	46.49	647.7	5.41	44	1.436	40.22	577.6	4.82
45	1.482	47.13	666.7	5.56	45	1.450	41.70	604.7	5.05
46	1.491	47.76	685.9	5.72	46	1.465	43.23	633.3	5.29
47	1.501	48.38	705.3	5.89	47	1.480	44.79	662.9	5.53
48	1.510	48.99	724.9	6.05	48	1.495	46.39	693.5	5.79
49	1.520	49.58	744.6	6.21	49	1.510	48.02	725.1	6.05
50	1.529	50.17	764.5	6.38	50	1.526	49.71	758.6	6.33
					51	1.543	51.46	794.0	6.63

The Baumé scale is that for liquids having density greater than that of water.



POLYMERIZED OR CRACKED GASOLINE—

The Result is the Same

The Gray Process (Clay Treating) produces high quality, low gum content motor fuel at low cost and without loss of octane number, whether the gasoline to be treated is from polymerization or cracking units.

This adaptability has a distinct economic advantage.

GRAY CLAY TREATING

THE GRAY PROCESSES CORPORATION

Licenses granted under United States and Foreign Patents by The Gray Processes Corporation

11 COMMERCE STREET • NEWARK • NEW JERSEY

WEIGHT, LB., OF EXTERNAL UPSET TUBING, EMPTY AND FULL OF FLUID[1]

Length of tubing string, ft.	Wt. of ¾-in. rods, lb.	Nominal size of tubing									
		2-in.		2½-in.		3-in.		3½-in.		4-in.	
		Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet
500	820	2,350	2,895	3,250	4,105	4,650	5,985	5,500	7,330	6,375	8,775
600	984	2,820	3,470	3,900	4,930	5,580	7,180	6,600	8,795	7,650	10,530
700	1,148	3,290	4,050	4,550	5,750	6,510	8,375	7,700	10,260	8,925	12,285
800	1,312	3,760	4,630	5,200	6,570	7,440	9,570	8,800	11,730	10,200	14,040
900	1,476	4,230	5,205	5,850	7,395	8,370	10,770	9,900	13,195	11,475	15,795
1000	1,640	4,700	5,785	6,500	8,215	9,300	11,965	11,000	14,660	12,750	17,550
1100	1,804	5,170	6,365	7,150	9,035	10,230	13,160	12,100	16,125	14,025	19,305
1200	1,968	5,640	6,945	7,800	9,855	11,160	14,360	13,200	17,590	15,300	21,060
1300	2,132	6,110	7,520	8,450	10,680	12,090	15,555	14,300	19,060	16,575	22,815
1400	2,296	6,580	8,100	9,100	11,500	13,020	16,750	15,400	20,525	17,850	24,570
1500	2,460	7,050	8,680	9,750	12,320	13,950	17,950	16,500	21,990	19,125	26,325
1600	2,624	7,520	9,255	10,400	13,145	14,880	19,145	17,600	23,455	20,400	28,075
1700	2,788	7,990	9,835	11,050	13,965	15,810	20,340	18,700	24,920	21,675	29,830
1800	2,952	8,460	10,415	11,700	14,785	16,740	21,540	19,800	26,390	22,950	31,585
1900	3,116	8,930	10,995	12,350	15,605	17,670	22,735	20,900	27,855	24,225	33,340
2000	3,280	9,400	11,570	13,000	16,430	18,600	23,930	22,000	29,320	25,500	35,095
2100	3,444	9,870	12,150	13,650	17,250	19,530	25,125	23,100	30,785	26,775	36,850
2200	3,608	10,340	12,730	14,300	18,070	20,460	26,325	24,200	32,250	28,050	38,605
2300	3,772	10,810	13,305	14,950	18,895	21,390	27,520	25,300	33,720	29,325	40,360
2400	3,936	11,280	13,885	15,600	19,715	22,320	28,715	26,400	35,185	30,600	42,115
2500	4,100	11,750	14,465	16,250	20,535	23,250	29,915	27,500	36,650	31,875	43,870
2600	4,264	12,220	15,045	16,900	21,355	24,180	31,110	28,600	38,115	33,150	45,625
2700	4,428	12,690	15,620	17,550	22,180	25,110	32,305	29,700	39,580	34,425	47,380
2800	4,592	13,160	16,200	18,200	23,000	26,040	33,505	30,800	41,050	35,700	49,135
2900	4,756	13,630	16,780	18,850	23,820	26,970	34,700	31,900	42,515	36,975	50,890
3000	4,920	14,100	17,357	19,500	24,645	27,900	35,895	33,000	43,980	38,250	52,645
3100	5,084	14,570	17,935	20,150	25,465	28,830	37,090	34,100	45,445	39,525	54,400
3200	5,248	15,040	18,515	20,800	26,285	29,760	38,290	35,200	46,910	40,800	56,155
3300	5,412	15,510	19,095	21,450	27,105	30,690	39,485	36,300	48,380	42,075	57,910
3400	5,576	15,980	19,670	22,100	27,930	31,620	40,680	37,400	49,845	43,350	59,665
3500	5,740	16,450	20,250	22,750	28,750	32,550	41,880	38,500	51,310	44,625	61,420
3600	5,904	16,920	20,830	23,400	29,570	33,480	43,075	39,600	52,775	45,900	63,175
3700	6,068	17,390	21,405	24,050	30,395	34,410	44,270	40,700	54,240	47,175	64,930
3800	6,232	17,860	21,985	24,700	31,215	35,340	45,470	41,800	55,710	48,450	66,685
3900	6,396	18,330	22,565	25,350	32,035	36,270	46,665	42,900	57,175	49,725	68,440
4000	6,560	18,800	23.145	26,000	32,855	37,200	47.860	44,000	58,640	51,000	70,195
4100	6,724	19,270	23,720	26,650	33,680	38,130	49,060	45,100	60,105	52,275	71,950
4200	6,888	19,740	24,300	27,300	34,500	39,060	50,255	46,200	61,570	53,550	73,705
4300	7,052	20,210	24,880	27,950	35,320	39,990	51,450	47,300	63,040	54,825	75,460
4400	7,216	20,680	25,455	28,600	36,140	40,920	52,645	48,400	64,505	56,100	77,215
4500	7,380	21,150	26,035	29,250	36,965	41,850	53,845	49,500	65,970	57,375	78,970
4600	7,544	21,620	26,615	29,900	37,785	42,780	55,040	50,600	67,435	58,650	80,725
4700	7,708	22,090	27,195	30,550	38,605	43,710	56,235	51,700	68,900	59,925	82,475
4800	7,872	22,560	27,770	31,200	39,430	44,640	57,435	52,800	70,370	61,200	84,230
4900	8,036	23,030	28,350	31,850	40,250	45,570	58,630	53,900	71,835	62,475	85,985
5000	8,200	23,500	28,930	32,500	41,070	46,500	59,825	55,000	73,300	63,750	87,740
5100	8,364	23,970	29,505	33,150	41,890	47,430	61,025	56,100	74,765	65,025	89,495
5200	8,528	24,440	30,085	33,800	42,715	48,360	62,220	57,200	76,235	66,300	91,250
5300	8,692	24,910	30,665	34,450	43,535	49,290	63,415	58,300	77,700	67,575	93,005
5400	8,856	25,380	31,245	35,100	44,355	50,220	64,610	59,400	79,165	68,850	94,760
5500	9,020	25,850	31,820	35,750	45,180	51,150	65,810	60,500	80,630	70,125	96,515
5600	9,184	26,320	32,400	36,400	46,000	52,080	67,005	61,600	82,095	71,400	98,270
5700	9,348	26,790	32,980	37,050	46,820	53,010	68,200	62,700	83,565	72,675	100,025
5800	9,512	27,260	33,555	37,700	47,640	53,940	69,400	63,800	85,030	73,950	101,780
5900	9,676	27,730	34,135	38,350	48,465	54,870	70,595	64,900	86,495	75,225	103,535
6000	9,840	28,200	34,715	39,000	49,285	55,800	71,790	66,000	87,960	76,500	105,290
6500	10,660	30,550	37,610	42,250	53,390	60,450	77,775	71,500	95,290	82,875	114,065
7000	11,480	32,900	40,505	45,500	57,495	65,100	83,760	77,000	102,620	89,250	122,840
7500	12,300	35,250	43,400	48,750	61,600	69,750	89,745	82,500	109,950	95,625	131,615
8000	13,120	37,600	46,295	52,000	65,705	74,400	95,730	88,000	117,280	102,000	140,390

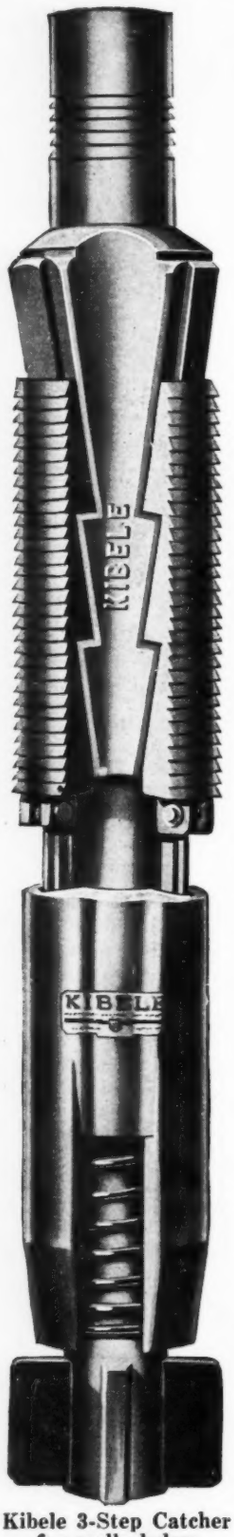
[1]Based on 20 deg. A.P.I. fluid. Allowance has been made for fluid displaced by ¾-in. rods.

What Happens to Your Casing When Tubing Falls?

THE ANSWER DEPENDS UPON YOUR CATCHER

Distorted pipe, due to use of short-slip catcher, may mean:

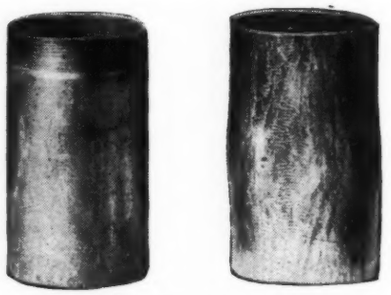
1. **A Plugged Well**
2. **An Expensive Fishing Job**
3. **No Further Swabbing**
4. **Cleanout Tools Won't Go Down**



Kibele 3-Step Catcher for wells below 4,000 feet.
(Patents Applied for)

We wanted a picture of what the long slips of a Kibele Catcher would do to casing when a string of tubing falls, to compare the result with the damage caused by any short-slip catcher. So we obtained two identical lengths of 7-inch pipe. In one we inserted a 2-step Kibele Catcher and then applied 80,000 pounds pressure in a hydraulic press. THERE WAS NO DISTORTION.

In the other length we inserted a short-slip catcher and could apply only 50,000 pounds pressure before dangerous distortion occurred.



Result of 80,000 lbs. with Kibele catcher. **Result of 50,000 lbs with short-slip catcher**

These are actual photographs, unretouched, of 7" O. D. Casing.

***Note Pressures* we applied, and figure the Probable Result in your own wells.** (See table opposite side of page for tubing weights)

Operators using Kibele Tubing Catchers find that their 2 or 3 times greater slip area provides a reliable safeguard against hazards of distorted casing. And they know that such greater slip area causes no sacrifice of an extra-large fluid and gas passage. A Kibele is the best insurance any operator can have against wedged catchers.

This TUBING CATCHER, along with KIBELE PISTONS, SWABS and PACKERS, is on sale at leading oil field supply stores everywhere.

KIBELE
MANUFACTURING COMPANY

FLUID EXPANDING PUMP PISTONS — A KIBELE DOESN'T COST.... IT EARNS — SWABS and TUBING CATCHERS

5101 MAPLE AVE. **DALLAS, TEXAS**

Pronounce it KIBLEY PATENTED

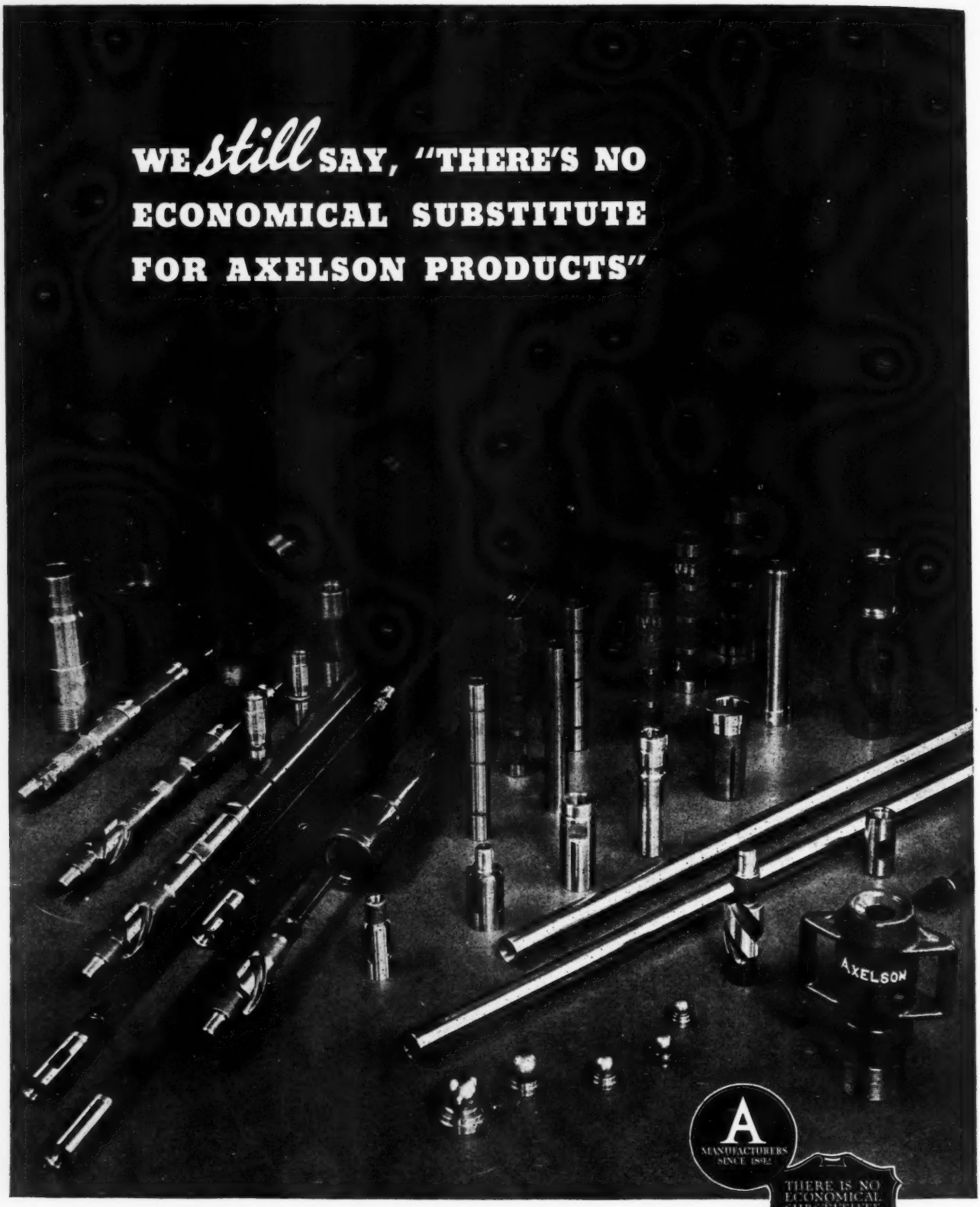
See Pages 983-986 of your 1937 Composite Catalog for complete details

THEORETICAL DISPLACEMENT OF OIL WELL PLUNGER PUMPS, BBL. PER HR.

Speed × Stroke[1]	Plunger diameter, in.												
	1	1¼	1½	1¾	2	2¼	2½	2¾	3	3¼	3¾	4¼	4¾
800	3.89	6.07	8.74	11.90	15.54	19.67	24.29	29.39	34.97	41.04	54.64	70.19	87.67
810	3.93	6.15	8.85	12.05	15.74	19.92	24.59	29.75	35.41	41.56	55.33	71.06	88.77
820	3.98	6.22	8.96	12.20	15.93	20.16	24.89	30.12	35.85	42.07	56.01	71.94	89.86
830	4.03	6.30	9.07	12.35	16.13	20.41	25.20	30.49	36.28	42.58	56.69	72.82	90.96
840	4.08	6.38	9.18	12.49	16.32	20.65	25.50	30.85	36.72	43.09	57.37	73.69	92.05
850	4.13	6.45	9.29	12.64	16.51	20.90	25.80	31.22	37.16	43.61	58.06	74.57	93.15
860	4.18	6.53	9.40	12.79	16.71	21.15	26.11	31.59	37.59	44.12	58.74	75.45	94.25
870	4.23	6.60	9.51	12.94	16.90	21.39	26.41	31.96	38.03	44.63	59.42	76.33	95.34
880	4.27	6.68	9.62	13.09	17.10	21.64	26.71	32.32	38.47	45.15	60.11	77.20	96.44
890	4.32	6.75	9.73	13.24	17.29	21.88	27.02	32.69	38.91	45.66	60.79	78.08	97.53
900	4.37	6.83	9.84	13.39	17.49	22.13	27.32	33.06	39.34	46.17	61.47	78.96	98.63
910	4.42	6.91	9.94	13.54	17.68	22.38	27.62	33.43	39.78	46.69	62.16	79.84	99.73
920	4.47	6.98	10.05	13.68	17.87	22.62	27.93	33.79	40.22	47.20	62.84	80.71	100.82
930	4.52	7.06	10.16	13.83	18.07	22.87	28.23	34.16	40.65	47.71	63.52	81.59	101.92
940	4.57	7.13	10.27	13.98	18.26	23.11	28.54	34.53	41.09	48.23	64.21	82.47	103.01
950	4.61	7.21	10.38	14.13	18.46	23.36	28.84	34.90	41.53	48.74	64.89	83.35	104.11
960	4.66	7.29	10.49	14.28	18.65	23.61	29.14	35.26	41.97	49.25	65.57	34.22	105.21
970	4.71	7.36	10.60	14.43	18.85	23.85	29.45	35.63	42.40	49.76	66.25	85.10	106.30
980	4.76	7.44	10.71	14.58	19.04	24.10	29.75	36.00	42.84	50.28	66.94	85.98	107.40
990	4.81	7.51	10.82	14.73	19.23	24.34	30.05	36.36	43.28	50.79	67.62	86.85	108.49
1000	4.86	7.59	10.93	14.87	19.43	24.59	30.36	36.73	43.71	51.30	68.30	87.73	109.59
1010	4.91	7.67	11.04	15.02	19.62	24.84	30.66	37.10	44.15	51.82	68.99	88.61	110.69
1020	4.95	7.74	11.15	15.17	19.82	25.08	30.96	37.47	44.59	52.33	69.67	89.49	111.78
1030	5.00	7.82	11.26	15.32	20.01	25.33	31.27	37.83	45.03	52.84	70.35	90.36	112.88
1040	5.05	7.89	11.37	15.47	20.21	25.57	31.57	38.20	45.46	53.36	71.04	91.24	113.97
1050	5.10	7.97	11.47	15.62	20.40	25.82	31.87	38.57	45.90	53.87	71.72	92.12	115.07
1060	5.15	8.04	11.58	15.77	20.59	26.06	32.18	38.94	46.34	54.38	72.40	93.00	116.16
1070	5.20	8.12	11.69	15.92	20.79	26.31	32.48	39.30	46.77	54.89	73.08	93.87	117.26
1080	5.25	8.20	11.80	16.06	20.98	26.56	32.79	39.67	47.21	55.41	73.77	94.75	118.36
1090	5.29	8.27	11.91	16.21	21.18	26.80	33.09	40.04	47.65	55.92	74.45	95.63	119.45
1100	5.34	8.35	12.02	16.36	21.37	27.05	33.39	40.41	48.09	56.43	75.13	96.51	120.55
1110	5.39	8.42	12.13	16.51	21.57	27.29	33.70	40.77	48.52	56.95	75.82	97.38	121.64
1120	5.44	8.50	12.24	16.66	21.76	27.54	34.00	41.14	48.96	57.46	76.50	98.26	122.74
1130	5.49	8.58	12.35	16.81	21.95	27.79	34.30	41.51	49.40	57.97	77.18	99.14	123.84
1140	5.54	8.65	12.46	16.96	22.15	28.03	34.61	41.87	49.83	58.49	77.87	100.01	124.93
1150	5.59	8.73	12.57	17.11	22.34	28.28	34.91	42.24	50.27	59.00	78.55	100.89	126.03
1160	5.63	8.80	12.68	17.25	22.54	28.52	35.21	42.61	50.71	59.51	79.23	101.77	127.12
1170	5.68	8.88	12.79	17.40	22.73	28.77	35.52	42.98	51.15	60.03	79.92	102.65	128.22
1180	5.73	8.96	12.90	17.55	22.93	29.02	35.82	43.34	51.58	60.54	80.60	103.52	129.32
1190	5.78	9.03	13.00	17.70	23.12	29.26	36.12	43.71	52.02	61.05	81.28	104.40	130.41
1200	5.83	9.11	13.11	17.85	23.31	29.51	36.43	44.08	52.46	61.56	81.96	105.28	131.51
1210	5.88	9.18	13.22	18.00	23.51	29.75	36.73	44.45	52.89	62.08	82.65	106.16	132.60
1220	5.93	9.26	13.33	18.15	23.70	30.00	37.04	44.81	53.33	62.59	83.33	107.03	133.70
1230	5.97	9.34	13.44	18.30	23.90	30.24	37.34	45.18	53.77	63.10	84.01	107.91	134.79
1240	6.02	9.41	13.55	18.44	24.09	30.49	37.64	45.55	54.21	63.62	84.70	108.79	135.89
1250	6.07	9.49	13.66	18.59	24.29	30.74	37.95	45.92	54.64	64.13	85.38	109.67	136.99
1260	6.12	9.56	13.77	18.74	24.48	30.98	38.25	46.28	55.08	64.64	86.06	110.54	138.08
1270	6.17	9.64	13.88	18.89	24.67	31.23	38.55	46.65	55.52	65.16	86.75	111.42	139.18
1280	6.22	9.71	13.99	19.04	24.87	31.47	38.86	47.02	55.95	65.67	87.43	112.30	140.27
1290	6.27	9.79	14.10	19.19	25.06	31.72	39.16	47.38	56.39	66.18	88.11	113.17	141.37
1300	6.31	9.87	14.21	19.34	25.26	31.97	39.46	47.75	56.83	66.69	88.79	114.05	142.47
1310	6.36	9.94	14.32	19.49	25.45	32.21	39.77	48.12	57.27	67.21	89.48	114.93	143.56
1320	6.41	10.02	14.43	19.63	25.65	32.46	40.07	48.49	57.70	67.72	90.16	115.81	144.66
1330	6.46	10.09	14.53	19.78	25.84	32.70	40.37	48.85	58.14	68.23	90.84	116.68	145.75
1340	6.51	10.17	14.64	19.93	26.03	32.95	40.68	49.22	58.58	68.75	91.53	117.56	146.85
1350	6.56	10.25	14.75	20.08	26.23	33.20	40.98	49.59	59.01	69.26	92.21	118.44	147.95
1360	6.61	10.32	14.86	20.23	26.42	33.44	41.29	49.96	59.45	69.77	92.89	119.32	149.04
1370	6.65	10.40	14.97	20.38	26.62	33.69	41.59	50.32	59.89	70.29	93.58	120.19	150.14
1380	6.70	10.47	15.08	20.53	26.81	33.93	41.89	50.69	60.33	70.80	94.26	121.07	151.23
1390	6.75	10.55	15.19	20.68	27.01	34.18	42.20	51.06	60.76	71.31	94.94	121.95	152.33
1400	6.80	10.63	15.30	20.82	27.20	34.42	42.50	51.42	61.20	71.82	95.62	122.82	153.42
1410	6.85	10.70	15.41	20.97	27.39	34.67	42.80	51.79	61.64	72.34	96.31	123.70	154.52
1420	6.90	10.78	15.52	21.12	27.59	34.92	43.11	52.16	62.07	72.85	96.99	124.58	155.62
1430	6.95	10.85	15.63	21.27	27.78	35.16	43.41	52.53	62.51	73.36	97.67	125.46	156.71
1440	6.99	10.93	15.74	21.42	27.98	35.41	43.71	52.89	62.95	73.88	98.36	126.33	157.81
1450	7.04	11.00	15.85	21.57	28.17	35.65	44.02	53.26	63.39	74.39	99.04	127.21	158.90
1460	7.09	11.08	15.96	21.72	28.37	35.90	44.32	53.63	63.82	74.90	99.72	128.09	160.00
1470	7.14	11.16	16.06	21.87	28.56	36.15	44.62	54.00	64.26	75.42	100.41	128.97	161.10
1480	7.19	11.23	16.17	22.01	28.75	36.39	44.93	54.36	64.70	75.93	101.09	129.84	162.19
1490	7.24	11.31	16.28	22.16	28.95	36.64	45.23	54.73	65.13	76.44	101.77	130.72	163.29
1500	7.29	11.38	16.39	22.31	29.14	36.88	45.54	55.10	65.57	76.96	102.46	131.60	164.38

[1]Length of stroke in inches times number of strokes per minute.
In the footnote on P 531 (Sheet 1) "feet" should read "inches."

WE *still* SAY, "THERE'S NO ECONOMICAL SUBSTITUTE FOR AXELSON PRODUCTS"



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DEEP WELL PLUNGER PUMPS **AXELSON** SUCKER RODS

DENSITY (LB. PER CU. FT.) OF GAS OF SPECIFIC GRAVITY 0.6 RELATIVE TO AIR = 1

Pressure	Temperature, deg. fahr.									
	20	30	40	50	60	70	80	90	100	110
25 in. Hg. vac.	.00845	.00827	.00811	.00795	.00780	.00765	.00751	.00737	.00724	.00711
20	.01669	.01635	.01602	.01571	.01541	.01511	.01483	.01456	.01430	.01405
15	.02496	.02445	.02397	.02350	.02305	.02261	.02219	.02179	.02140	.02102
10	.03324	.03256	.03191	.03128	.03069	.03010	.02955	.02901	.02849	.02799
5	.04148	.04064	.03982	.03904	.03830	.03757	.03687	.03620	.03555	.03493
Atmos.	.04976	.04874	.04777	.04683	.04593	.04506	.04423	.04342	.04265	.04190
5 lb./in². gauge	.06665	.06529	.06398	.06273	.06154	.06036	.05924	.05816	.05712	.05612
10	.08354	.08184	.08020	.07862	.07714	.07566	.07425	.07290	.07160	.07034
15	.10043	.09838	.09641	.09452	.09273	.09095	.08927	.08764	.08608	.08456
20	.11732	.11493	.11263	.11042	.10833	.10625	.10428	.10238	.10055	.09879
25	.13422	.13148	.12884	.12631	.12392	.12154	.11929	.11712	.11503	.11301
30	.15111	.14802	.14506	.14221	.13952	.13684	.13431	.13186	.12950	.12723
35	.16800	.16457	.16127	.15811	.15511	.15214	.14932	.14660	.14398	.14145
40	.18489	.18111	.17749	.17400	.17071	.16743	.16433	.16134	.15846	.15567
45	.20178	.19766	.19370	.18990	.18631	.18273	.17934	.17608	.17293	.16990
50	.21867	.21420	.20992	.20580	.20190	.19803	.19436	.19082	.18741	.18412
60	.25245	.24730	.24235	.23759	.23309	.22862	.22438	.22030	.21636	.21256
70	.28623	.28039	.27478	.26938	.26428	.25921	.25441	.24978	.24531	.24101
80	.32002	.31348	.30720	.30118	.29547	.28980	.28443	.27926	.27427	.26945
90	.35380	.34657	.33963	.33297	.32667	.32040	.31446	.30874	.30322	.29790
100	.38758	.37966	.37206	.36476	.35786	.35099	.34449	.33822	.33217	.32634
125	.47203	.46239	.45314	.44425	.43584	.42747	.41955	.41191	.40455	.39745
150	.55649	.54512	.53421	.52373	.51381	.50395	.49461	.48561	.47693	.46856
175	.64094	.62785	.61529	.60321	.59179	.58043	.56968	.55931	.54932	.53967
200	.72540	.71058	.69636	.68269	.66977	.65692	.64474	.63301	.62170	.61078
225	.80985	.79331	.77743	.76218	.74775	.73340	.71981	.70671	.69408	.68189
250	.89431	.87604	.85851	.84166	.82573	.80988	.79487	.78040	.76646	.75300
275	.97876	.95877	.93958	.92114	.90370	.88636	.86994	.85410	.83884	.82411
300	1.0632	1.0415	1.0207	1.0006	.98168	.96284	.94500	.9278	.91122	.89522
325	1.1477	1.1242	1.1017	1.0801	1.0597	1.0393	1.0201	1.0015	.98360	.96633
350	1.2321	1.2070	1.1828	1.1596	1.1376	1.1158	1.0951	1.0752	1.0560	1.0374
375	1.3166	1.2897	1.2639	1.2391	1.2156	1.1923	1.1702	1.1489	1.1284	1.1086
400	1.4010	1.3724	1.3449	1.3186	1.2936	1.2688	1.2453	1.2226	1.2007	1.1797
425	1.4855	1.4551	1.4260	1.3980	1.3716	1.3453	1.3203	1.2963	1.2731	1.2508
450	1.5699	1.5379	1.5071	1.4775	1.4496	1.4217	1.3954	1.3700	1.3455	1.3219
475	1.6544	1.6206	1.5882	1.5570	1.5275	1.4982	1.4705	1.4437	1.4179	1.3930
500	1.7389	1.7033	1.6692	1.6365	1.6055	1.5747	1.5455	1.5174	1.4903	1.4641
600	2.0767	2.0343	1.9935	1.9544	1.9174	1.8806	1.8458	1.8122	1.7798	1.7485
700	2.4145	2.3652	2.3178	2.2724	2.2293	2.1865	2.1460	2.1070	2.0693	2.0330
800	2.7523	2.6961	2.6421	2.5903	2.5412	2.4925	2.4463	2.4018	2.3588	2.3174
900	3.0901	3.0270	2.9664	2.9082	2.8532	2.7984	2.7465	2.6966	2.6484	2.6019
1000	3.4279	3.3579	3.2907	3.2261	3.1651	3.1043	3.0468	2.9914	2.9379	2.8863
1100	3.7658	3.6889	3.6150	3.5441	3.4770	3.4103	3.3471	3.2861	3.2274	3.1708
1200	4.1036	4.0198	3.9393	3.8620	3.7889	3.7162	3.6473	3.5809	3.5169	3.4552
1300	4.4414	4.3507	4.2636	4.1799	4.1008	4.0221	3.9476	3.8757	3.8065	3.7396
1400	4.7792	4.6816	4.5879	4.4979	4.4127	4.3280	4.2478	4.1705	4.0960	4.0241
1500	5.1170	5.0125	4.9122	4.8158	4.7246	4.6340	4.5481	4.4653	4.3855	4.3085
1750	5.9616	5.8398	5.7229	5.6106	5.5044	5.3988	5.2987	5.2023	5.1093	5.0196
2000	6.8061	6.6671	6.5337	6.4055	6.2842	6.1636	6.0494	5.9393	5.8331	5.7307
2250	7.6507	7.4944	7.3444	7.2003	7.0640	6.9284	6.8000	6.6763	6.5570	6.4418
2500	8.4952	8.3217	8.1552	7.9951	7.8438	7.6932	7.5507	7.4132	7.2808	7.1529
2750	9.3398	9.1490	8.9659	8.7899	8.6235	8.4580	8.3013	8.1502	8.0046	7.8640
3000	10.1843	9.9763	9.7766	9.5848	9.4033	9.2229	9.0520	8.8872	8.7284	8.5751
3500	11.8734	11.6309	11.3981	11.1744	10.9629	10.7525	10.5533	10.3612	10.1760	9.9973
4000	13.5625	13.2855	13.0196	12.7641	12.5224	12.2821	12.0545	11.8351	11.6236	11.4196
4500	15.2516	14.9401	14.6411	14.3537	14.0820	13.8118	13.5558	13.3091	13.0713	12.8418
5000	16.9407	16.5947	16.2625	15.9434	15.6416	15.3414	15.0571	14.7831	14.5189	14.2640

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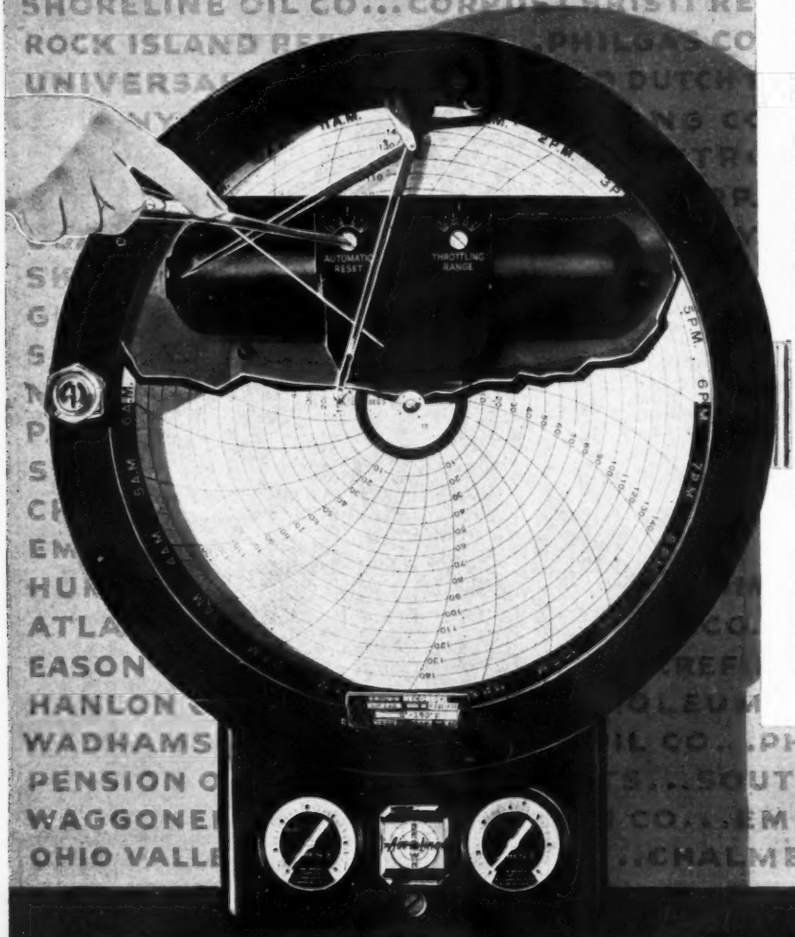

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PRESSURE DROP, LB. PER SQ. IN. PER MILE OF 4-in. PIPE LINE (Oil of 40° A.P.I.)

Quantity of 40° A. P. I. oil, bbl. per hr.	Viscosity of oil, Saybolt Universal seconds										
	50	60	70	80	90	100	110	120	130	140	150
100	10.90	11.86	12.59	13.19	13.71	14.18	14.59	14.98	15.35	15.71	16.03
105	11.86	12.90	13.71	14.35	14.92	15.42	15.89	16.29	16.69	17.09	17.43
110	12.87	14.00	14.87	15.58	16.18	16.74	17.24	17.68	18.11	18.51	18.91
115	13.88	15.11	16.05	16.84	17.49	18.08	18.61	19.10	19.56	19.99	20.41
120	14.94	16.28	17.27	18.13	18.83	19.46	20.04	20.57	21.04	21.51	21.95
125	16.02	17.48	18.55	19.46	20.21	20.87	21.50	22.08	22.59	23.08	23.54
130	17.14	18.68	19.85	20.83	21.64	22.35	23.01	23.62	24.17	24.70	25.20
135	18.31	19.98	21.23	22.24	23.13	23.90	24.58	25.23	25.82	26.38	26.92
140	19.48	21.29	22.61	23.68	24.64	25.47	26.17	26.85	27.51	28.11	28.66
145	20.71	22.63	24.02	25.16	26.19	27.06	27.81	28.52	29.23	29.87	30.44
150	21.96	23.99	25.48	26.68	27.78	28.69	29.52	30.25	31.01	31.67	32.30
155	23.24	25.38	26.97	28.25	29.40	30.37	31.25	32.04	32.82	33.53	34.20
160	24.55	26.81	28.48	29.90	31.07	32.12	33.07	33.88	34.71	35.44	36.16
165	25.90	28.24	30.04	31.52	32.74	33.89	34.87	35.76	36.59	37.39	38.13
170	27.24	29.72	31.67	33.18	34.46	35.69	36.73	37.67	38.52	39.36	40.15
175	28.63	31.26	33.29	34.89	36.25	37.52	38.62	39.61	40.51	41.38	42.21
180	30.04	32.82	34.97	36.62	38.10	39.37	40.57	41.62	42.54	43.42	44.30
185	31.52	34.42	36.73	38.44	40.01	41.31	42.57	43.69	44.66	45.59	46.48
190	33.01	36.03	38.42	40.23	41.88	43.25	44.59	45.76	46.78	47.76	48.67
195	34.52	37.66	40.18	42.08	43.82	45.26	46.63	47.87	48.98	49.93	50.93
200	36.09	39.39	41.91	44.00	45.74	47.30	48.70	50.00	51.17	52.22	53.22
205	37.70	41.18	43.78	45.97	47.80	49.40	50.82	52.23	53.42	54.57	55.57
210	39.32	42.87	45.60	47.95	49.82	51.55	52.98	54.42	55.67	56.92	57.97
215	41.01	44.63	47.49	49.95	51.91	53.67	55.19	56.69	57.99	59.30	60.41
220	42.67	46.46	49.40	51.98	53.98	55.82	57.45	59.03	60.40	61.66	62.87
225	44.35	48.26	51.39	54.04	56.13	58.05	59.76	61.30	62.78	64.11	65.37
230	46.07	50.16	53.38	56.14	58.33	60.28	62.12	63.67	65.29	66.61	67.99
235	47.79	52.00	55.42	58.24	60.58	62.62	64.49	66.11	67.79	69.17	70.55
240	49.60	53.92	57.42	60.37	62.87	64.94	66.88	68.57	70.26	71.76	73.14
245	51.42	55.85	59.51	62.51	65.12	67.27	69.30	71.12	72.75	74.39	75.82
250	53.19	57.81	61.62	64.74	67.46	69.63	71.74	73.64	75.34	77.04	78.53
255	55.01	59.89	63.77	66.96	69.93	72.12	74.24	76.22	77.99	79.75	81.31
260	56.89	61.96	66.00	69.23	72.25	74.60	76.80	78.86	80.70	82.46	84.15
265	58.79	63.98	68.18	71.61	74.66	77.11	79.40	81.54	83.37	85.20	86.96
270	60.70	66.09	70.45	73.93	77.10	79.72	82.02	84.16	86.14	87.96	89.78
275	62.64	68.39	72.66	76.28	79.49	82.28	84.66	86.88	88.94	90.83	92.72
280	64.62	70.50	75.02	78.77	82.01	84.99	87.38	89.59	91.81	93.77	95.64
285	66.58	72.68	77.36	81.16	84.60	87.60	90.07	92.46	94.67	96.70	98.64
290	68.57	74.97	79.72	83.65	87.13	90.33	92.89	95.36	97.55	99.65	101.57
295	70.57	77.29	82.02	86.09	89.68	92.99	95.73	98.19	100.46	102.64	104.63
300	72.68	79.53	84.42	88.63	92.35	95.77	98.51	101.05	103.50	105.65	107.70
305	74.74	81.92	86.88	91.33	95.07	98.51	101.44	104.07	106.50	108.83	110.85
310	76.90	84.21	89.33	93.93	97.79	101.24	104.37	106.98	109.49	112.00	114.09
315	78.96	86.62	91.79	96.54	100.53	104.09	107.33	110.02	112.61	115.09	117.36
320	81.14	88.94	94.28	99.18	103.30	106.86	110.31	113.09	115.76	118.21	120.55
325	83.35	91.39	96.90	101.83	106.08	109.75	113.31	116.18	118.94	121.47	123.88
330	85.49	93.89	99.57	104.67	108.93	112.72	116.39	119.35	122.19	124.68	127.28
335	87.72	96.38	102.12	107.36	111.76	115.66	119.44	122.49	125.30	127.98	130.67
340	89.98	98.77	104.81	110.08	114.61	118.63	122.40	125.67	128.56	131.32	133.96
345	92.25	101.30	107.51	112.82	117.48	121.62	125.50	128.99	131.84	134.81	137.40
350	94.57	103.76	110.28	115.75	120.54	124.80	128.67	132.26	135.19	138.26	140.92
355	96.87	106.32	113.04	118.52	123.59	127.84	131.81	135.65	138.66	141.67	144.41
360	99.33	108.91	115.95	121.45	126.52	131.03	134.98	138.92	142.02	145.12	147.94
365	101.67	111.66	118.76	124.26	129.62	134.11	138.16	142.22	145.55	148.59	151.49
370	104.02	114.15	121.58	127.23	132.74	137.35	141.52	145.54	148.96	152.09	155.21
375	106.57	116.81	124.46	130.27	135.77	140.51	144.79	148.92	152.59	155.65	158.86
380	109.11	119.47	127.48	133.29	138.94	143.80	148.20	152.44	156.05	159.35	162.64
385	111.51	122.30	130.36	136.32	142.12	146.96	151.63	155.82	159.69	163.07	166.29
390	114.08	125.00	133.26	139.38	145.33	150.29	154.92	159.22	163.36	166.83	170.14
395	116.51	127.71	136.19	142.63	148.57	153.66	158.40	162.81	167.05	170.62	173.84
400	119.16	130.47	139.34	145.78	151.87	157.26	161.95	166.48	170.65	174.31	177.61

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Thousands of miles of J&L Line Pipe are in use today giving owners completely satisfactory service. In a recent instance, a J&L Seamless line withstood, without a single leak, the terrific, damaging forces of flood waters and wash-out.

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J&L PIPE

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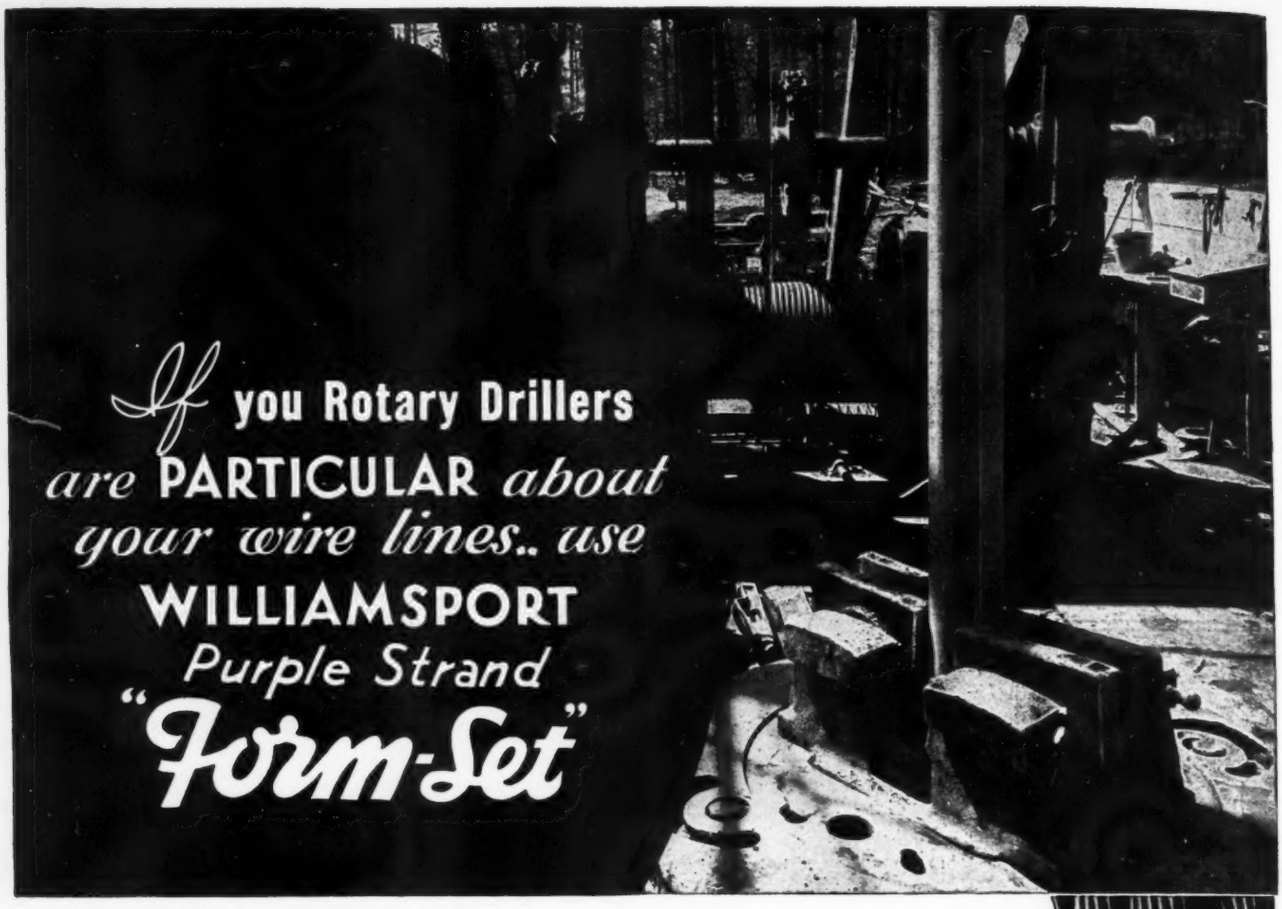
DRILL PIPE · CASING · TUBING · LINE PIPE

MAXIMUM[1] SAFE WORKING LOAD, LB., ON DRILLING AND CASING LINES, FRICTION ALLOWED

Size of line, in.	Strand	Grade	Number of lines supporting traveling block									
			4	5	6	7	8	9	10	11	12	13
¾	6 x 7	A.P.I. "N"	24,355	29,825	35,070	40,095	44,930	49,510	53,920	58,100	62,145	65,970
		A.P.I. "L"	26,715	32,715	38,470	43,985	49,285	54,315	59,150	63,730	68,175	72,370
		A.P.I. "J"	29,225	35,790	42,085	48,115	53,915	59,415	64,705	69,720	74,575	79,165
		Imp. plow	33,655	41,210	48,460	55,405	62,085	68,415	74,510	80,280	85,875	91,160
⅞		A.P.I. "N"	33,065	40,490	47,610	54,435	60,995	67,215	73,205	78,875	84,370	89,560
		A.P.I. "L"	36,310	44,465	52,285	59,780	66,985	73,820	80,390	86,620	92,655	98,360
		A.P.I. "J"	39,555	48,440	56,960	65,130	72,975	80,420	87,580	94,365	100,940	107,155
		Imp. plow	45,460	55,670	65,460	74,850	83,865	92,425	100,655	108,450	116,010	123,150
1		A.P.I. "N"	42,805	52,415	61,635	70,475	78,965	87,020	94,770	102,115	109,230	115,950
		A.P.I. "L"	47,085	57,660	67,800	77,520	86,860	95,725	104,250	112,325	120,150	127,545
		A.P.I. "J"	51,365	62,900	73,965	84,570	94,760	104,425	113,725	122,535	131,075	139,140
		Imp. plow	59,040	72,300	85,015	97,205	108,920	120,030	130,720	140,845	150,660	159,935
1⅛		A.P.I. "N"	53,725	65,795	77,365	88,455	99,115	109,225	118,954	128,170	137,100	145,540
		A.P.I. "L"	59,040	72,300	85,105	97,205	108,920	120,030	130,720	140,845	150,660	159,935
		A.P.I. "J"	64,355	78,805	92,665	105,955	118,720	130,835	142,485	153,520	164,220	174,325
		Imp. plow	73,800	90,375	106,270	121,505	136,145	150,040	163,400	176,055	188,325	199,915
1¼		A.P.I. "N"	65,685	80,435	94,580	108,140	121,170	133,535	145,425	156,690	167,610	177,925
		A.P.I. "L"	71,880	88,025	103,505	118,345	132,605	146,135	159,150	171,480	183,430	194,720
		A.P.I. "J"	78,230	95,795	112,645	128,795	144,315	159,040	173,205	186,620	199,625	211,910
		Imp. plow	90,035	110,255	129,650	148,240	166,100	183,045	199,345	214,790	229,755	243,900
¾	6 x 19	A.P.I. "N"	24,795	30,365	35,705	40,825	45,745	50,415	54,900	59,155	63,275	67,170
		A.P.I. "L"	27,600	33,800	39,745	45,445	50,920	56,115	61,110	65,845	70,435	74,770
		A.P.I. "J"	30,405	37,235	43,785	50,060	56,095	61,815	67,320	72,535	77,590	82,365
		Imp. plow	34,980	42,840	50,370	57,595	64,535	71,120	77,450	83,450	89,265	94,760
⅞		A.P.I. "N"	33,655	41,210	48,460	55,405	62,085	68,415	74,510	80,280	85,875	91,160
		A.P.I. "L"	37,490	45,910	53,985	61,725	69,165	76,220	83,005	89,435	95,670	101,555
		A.P.I. "J"	41,330	50,610	59,510	68,045	76,240	84,020	91,505	98,590	105,460	111,955
		Imp. plow	47,530	58,200	68,440	78,250	87,680	96,625	105,230	113,380	121,280	128,745
1		A.P.I. "N"	43,540	53,320	62,700	71,690	80,325	88,520	96,405	103,875	111,110	117,950
		A.P.I. "L"	48,710	59,645	70,140	80,195	89,855	99,025	107,845	116,195	124,295	131,945
		A.P.I. "J"	53,875	65,975	77,575	88,700	99,385	109,525	119,280	128,520	137,475	145,940
		Imp. plow	61,995	75,915	89,265	102,065	114,365	126,030	137,255	147,885	158,190	167,930
1⅛		A.P.I. "N"	54,615	66,875	78,640	89,915	100,750	111,030	120,915	130,280	139,360	147,940
		A.P.I. "L"	61,255	75,010	88,205	100,850	113,000	124,530	135,620	146,125	156,310	165,930
		A.P.I. "J"	67,895	83,145	97,770	111,785	125,255	138,035	150,325	161,970	173,260	183,925
		Imp. plow	78,230	95,795	112,645	128,795	144,315	159,040	173,205	186,620	199,625	211,910
1¼		A.P.I. "N"	67,895	83,145	97,770	111,785	125,255	138,035	150,325	161,970	173,260	183,925
		A.P.I. "L"	75,275	92,180	108,395	123,935	138,870	153,040	166,665	179,580	192,090	203,915
		A.P.I. "J"	83,395	102,125	120,085	137,300	153,845	169,540	184,640	198,945	212,805	225,905
		Imp. plow	95,940	117,485	138,150	157,960	176,990	195,050	212,420	228,875	244,820	259,890

[1]Safety factor of 5 used.



Most good drillers are particular about using Rotary Lines that give maximum service: greater operating convenience plus longer endurance. And that's why you'll find Purple Strand "Form-Set" used so extensively. For this superior line, *pre*formed the Williamsport way, has proved exceptionally efficient in Rotary Drilling.

As many drillers can tell you, this wire line does more work because it works longer—and charging its slight extra cost against all the extra work accomplished—you can save by using Purple Strand "Form-Set."

But see for yourself how this line serves so well; look how much tighter the wires lay together to resist friction. Note how the line hangs without twisting, instantly ready for use, and watch it perform on your operations. Make your next replacement with Williamsport.

WILLIAMSPORT WIRE ROPE CO.

Williamsport, Pennsylvania — 122 South Michigan Avenue, Chicago, Illinois

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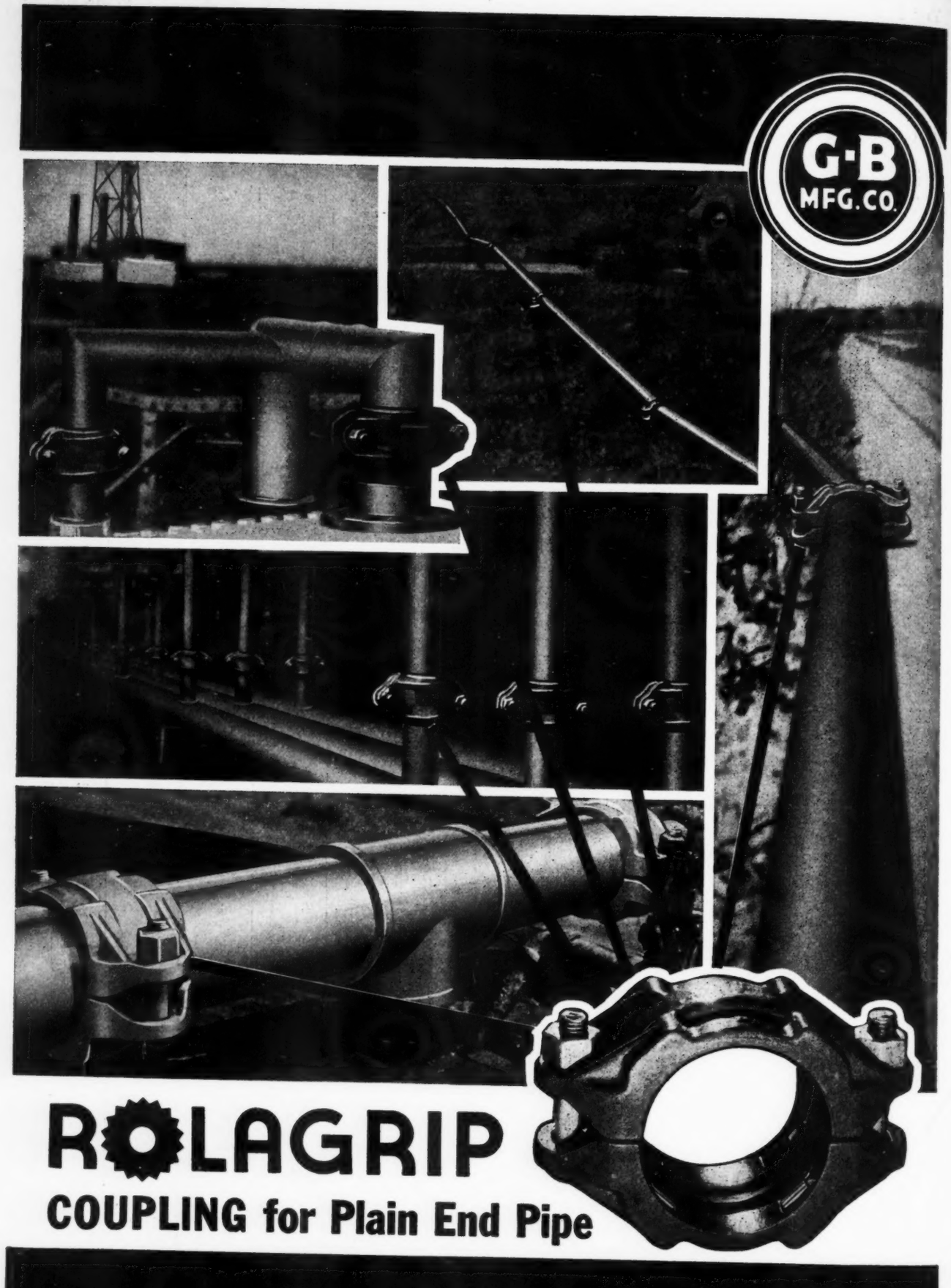
Oil Country Sales Offices: Williamsport Bldg., Fourth and Midland Valley Tracks, Tulsa, Oklahoma; 10 North Milby Street, Houston, Texas
Distributors in Texas, Louisiana and Arkansas: Mid-Continent Supply Company.
General Machine and Tool Company, Distributors in Kansas.
American Pipe and Supply Company, Distributors in the Rocky Mountain Territory.

PRESSURE DROP, LB. PER SQ. IN. PER MILE OF 6-in. PIPE LINE (Oil of 20° A.P.I.)

Quantity of 20° A.P.I. oil, bbl. per hr.	Viscosity of oil, Saybolt Universal seconds										
	140	160	180	200	220	240	260	280	300	320	340
200	8.49	8.82	9.13	9.41	9.67	9.90	10.12	10.32	10.51	10.68	10.84
205	8.86	9.20	9.53	9.82	10.10	10.34	10.56	10.78	10.98	11.16	11.33
210	9.23	9.58	9.92	10.23	10.51	10.76	11.00	11.23	11.44	11.62	11.80
215	9.62	9.99	10.33	10.66	10.95	11.21	11.46	11.70	11.92	12.11	12.30
220	10.01	10.40	10.75	11.09	11.40	11.67	11.93	12.18	12.41	12.62	12.80
225	10.41	10.82	11.18	11.53	11.85	12.14	12.41	12.67	12.91	13.13	13.32
230	10.82	11.24	11.61	11.97	12.31	12.61	12.90	13.17	13.42	13.64	13.85
235	11.23	11.66	12.06	12.42	12.77	13.09	13.39	13.67	13.93	14.17	14.38
240	11.65	12.10	12.50	12.89	13.25	13.57	13.88	14.18	14.45	14.70	14.92
245	12.08	12.55	12.96	13.36	13.74	14.07	14.39	14.69	14.97	15.23	15.46
250	12.50	12.98	13.42	13.81	14.21	14.56	14.89	15.20	15.49	15.76	16.00
255	12.93	13.43	13.89	14.29	14.70	15.06	15.41	15.73	16.03	16.31	16.57
260	13.38	13.89	14.36	14.78	15.20	15.58	15.94	16.27	16.58	16.87	17.14
265	13.82	14.36	14.85	15.28	15.71	16.11	16.48	16.82	17.14	17.45	17.72
270	14.28	14.84	15.34	15.79	16.21	16.64	17.01	17.37	17.71	18.02	18.31
275	14.75	15.32	15.84	16.31	16.74	17.18	17.57	17.94	18.27	18.60	18.90
280	15.23	15.81	16.35	16.82	17.27	17.71	18.12	18.50	18.85	19.18	19.50
285	15.70	16.31	16.86	17.35	17.80	18.27	18.69	19.08	19.44	19.79	20.12
290	16.18	16.79	17.36	17.87	18.33	18.81	19.25	19.65	20.02	20.38	20.73
295	16.67	17.29	17.89	18.41	18.88	19.36	19.82	20.23	20.62	21.01	21.35
300	17.17	17.81	18.41	18.96	19.44	19.93	20.40	20.83	21.23	21.63	21.98
305	17.68	18.34	18.95	19.51	20.03	20.51	21.00	21.43	21.84	22.25	22.62
310	18.19	18.86	19.50	20.08	20.60	21.10	21.59	22.04	22.47	22.90	23.26
315	18.70	19.40	20.04	20.64	21.18	21.70	22.18	22.67	23.11	23.54	23.93
320	19.22	19.94	20.60	21.22	21.77	22.29	22.80	23.30	23.75	24.18	24.60
325	19.73	20.47	21.15	21.77	22.36	22.90	23.40	23.92	24.39	24.82	25.26
330	20.27	21.02	21.72	22.36	22.95	23.52	24.02	24.56	25.04	25.49	25.94
335	20.81	21.57	22.30	22.96	23.57	24.14	24.65	25.20	25.70	26.16	26.63
340	21.34	22.15	22.88	23.56	24.18	24.75	25.30	25.85	26.37	26.84	27.32
345	21.88	22.73	23.47	24.17	24.81	25.39	25.96	26.51	27.04	27.53	28.02
350	22.45	23.30	24.06	24.78	25.44	26.04	26.63	27.17	27.71	28.22	28.72
355	23.02	23.90	24.66	25.40	26.08	26.70	27.29	27.85	28.39	28.91	29.43
360	23.59	24.49	25.27	26.01	26.71	27.35	27.97	28.52	29.10	29.63	30.15
365	24.15	25.08	25.86	26.62	27.34	28.02	28.63	29.20	29.77	30.34	30.85
370	24.73	25.68	26.49	27.27	28.01	28.68	29.31	29.90	30.46	31.05	31.57
375	25.31	26.30	27.12	27.92	28.66	29.35	30.00	30.60	31.18	31.78	32.32
380	25.91	26.91	27.76	28.58	29.34	30.05	30.69	31.31	31.91	32.52	33.07
385	26.50	27.53	28.40	29.23	30.00	30.73	31.39	32.05	32.64	33.25	33.84
390	27.10	28.16	29.05	29.90	30.69	31.44	32.12	32.77	33.37	34.00	34.60
395	27.70	28.79	29.71	30.57	31.39	32.13	32.83	33.52	34.11	34.76	35.38
400	28.29	29.41	30.37	31.23	32.04	32.83	33.54	34.23	34.86	35.50	36.13
405	28.90	30.04	31.03	31.92	32.75	33.56	34.28	34.96	35.61	36.26	36.91
410	29.51	30.69	31.73	32.61	33.46	34.29	35.03	35.73	36.39	37.03	37.70
415	30.13	31.36	32.40	33.30	34.17	35.02	35.79	36.50	37.18	37.81	38.49
420	30.78	32.01	33.07	34.00	34.89	35.76	36.54	37.27	37.97	38.61	39.29
425	31.43	32.69	33.75	34.70	35.62	36.48	37.31	38.05	38.74	39.43	40.09
430	32.09	33.35	34.47	35.44	36.35	37.23	38.08	38.84	39.54	40.25	40.92
435	32.76	34.05	35.16	36.15	37.08	37.98	38.85	39.63	40.35	41.07	41.73
440	33.40	34.69	35.86	36.87	37.79	38.71	39.60	40.40	41.14	41.88	42.55
445	34.08	35.40	36.56	37.63	38.57	39.48	40.39	41.21	41.96	42.71	43.40
450	34.75	36.10	37.26	38.38	39.34	40.28	41.18	42.01	42.78	43.55	44.26
455	35.43	36.78	37.99	39.11	40.13	41.05	41.97	42.82	43.61	44.40	45.12
460	36.12	37.49	38.74	39.88	40.88	41.82	42.76	43.64	44.44	45.25	45.99
465	36.81	48.18	39.48	40.65	41.68	42.64	43.56	44.46	45.28	46.10	46.86
470	37.50	38.90	40.23	41.43	42.44	43.46	44.40	45.28	46.16	46.96	47.73
475	38.20	39.63	40.99	42.17	43.24	44.25	45.21	46.14	47.04	47.83	48.61
480	38.88	40.34	41.73	42.93	44.03	45.02	46.04	46.99	47.87	48.67	49.47
485	39.58	41.08	42.49	43.72	44.84	45.85	46.86	47.83	48.72	49.54	50.36
490	40.29	41.81	43.26	44.48	45.66	46.69	47.72	48.71	49.62	50.46	51.26
495	41.00	42.56	44.04	45.28	46.48	47.53	48.58	49.55	50.49	51.38	52.20
500	41.72	43.31	44.81	46.08	47.31	48.38	49.46	50.45	51.40	52.27	53.14


G-B
MFG. CO.
ROLAGRIP
COUPLING for Plain End Pipe